Methodology Report

Water and Wastewater System Development Charges

Prepared For

City of Salem, Oregon

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GALARDI CONSULTING, LLC

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SECTION 1

Introduction

Oregon legislation establishes guidelines for the calculation of system development charges (SDCs). Within these guidelines, local governments have some latitude in selecting technical approaches and establishing local policies related to the development and administration of SDCs. A discussion of this legislation follows, along with the recommended methodology for calculating updated water and wastewater SDCs for the City of Salem (the City).

SDC Legislation in Oregon

In the 1989 Oregon state legislative session, a bill was passed that created a uniform framework for the imposition of SDCs statewide. This legislation (Oregon Revised Statute [ORS] 223.297-223.314), which became effective on July 1, 1991, (with subsequent amendments), authorizes local governments to assess SDCs for the following types of capital improvements:

- Drainage and flood control
- Water supply, treatment, and distribution
- Wastewater collection, transmission, treatment, and disposal
- Transportation
- Parks and recreation

The legislation provides guidelines on the calculation and modification of SDCs, accounting requirements to track SDC revenues, and the adoption of administrative review procedures.

SDC Structure

SDCs can be developed around two concepts: (1) a reimbursement fee ("SDCr"), and (2) an improvement fee ("SDCi"), or a combination of the two. The **reimbursement fee** is based on the costs of capital improvements *already constructed or under construction*[1]. The legislation requires the reimbursement fee to be established or modified by an ordinance or resolution setting forth the methodology used to calculate the charge. This methodology must consider the cost of existing facilities, prior contributions by existing users, gifts or grants from federal or state government or private persons, the value of unused capacity available for future system users, rate-making principles employed to finance the capital improvements, and other relevant factors. The objective of the methodology must be that future system users contribute no more than an equitable share of the capital costs of *existing*[2] facilities. Reimbursement fee revenues are restricted only to capital expenditures for the specific system (water, wastewater, etc.) for which they are assessed, including debt service.

[1] ORS 223.299.3
[2] ORS 223.304.1.b.A

The methodology for establishing or modifying an **improvement fee** must be specified in an ordinance or resolution that demonstrates consideration of the *projected costs of capital improvements identified in an adopted plan and list*[3], that are needed to increase capacity in the system to meet the demands of new development. Revenues generated through improvement fees are dedicated to *capacity-increasing capital improvements*[4] or the repayment of debt on such improvements. An increase in capacity is established if an improvement increases the level of service provided by existing facilities or provides new facilities.

In many systems, growth needs will be met through a combination of existing available capacity and future capacity-enhancing improvements. Therefore, the law provides for a **combined fee** (reimbursement plus improvement component). However, when such a fee is developed, the methodology must demonstrate *that the charge is not based on providing the same system capacity*.[5] For example, the methodology should not result in growth being charged for a full unit of water or wastewater treatment capacity through the reimbursement fee, and again through the improvement fee: but instead should recover a single unit of treatment that is based on the weighted average cost of existing and future capacity.

Credits

The legislation requires that a credit be provided against the improvement fee for the construction of *"qualified public improvements."* Qualified public improvements are improvements that are required as a condition of development approval, identified in the system's capital improvement program, and either (1) *not located on or contiguous to the property that is the subject of development approval*, or (2) *located in whole or in part, on or contiguous to property that is the subject of development approval and required to be built larger or with greater capacity than is necessary for the particular development project to which the improvement fee is related.*[6]

Update and Review

The methodology for establishing or modifying improvement or reimbursement fees shall be available for public inspection. The local government must *maintain a list of persons who have made a written request for notification prior to the adoption or amendment*[7] of such fees. The legislation includes provisions regarding notification of hearings and filing for reviews. Recent legislative amendments clarified that *"periodic application of an adopted specific cost index or… modification to any of the factors related to rate that are incorporated in the established methodology"* are not considered "modifications" to the SDC. As such, the local government is not required to adhere to the notification provisions for such routine adjustments. As a result of 2003 legislative amendments, the criteria for making adjustments to the SDC rate, which do not constitute a change in the methodology, have been further refined as follows:

- "Factors related to the rate" are limited to changes to costs in materials, labor, or real property as applied to projects in the required project list.

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[3] ORS 223.304.2.a.A
[4] ORS 223.307.2
[5] ORS 223.304.3
[6] ORS 223.304.4
[7] ORS 223.304.6

- The cost index must consider average change in costs in materials, labor, or real property and must be an index published for purposes other than SDC rate setting.[8]

The notification requirements for changes to the fees that do represent a modification to the methodology are a 90-day written notice prior to first public hearing, with the SDC methodology available for review 60 days prior to public hearing.[9]

Other Provisions

Other provisions of the legislation require:

- Preparation of a capital improvement program or comparable plan (prior to the establishment of a SDC), that includes a list of the improvements that the jurisdiction intends to fund with improvement fee revenues and the estimated timing, cost, and eligible portion of each improvement.
- Deposit of SDC revenues into dedicated accounts and annual accounting of revenues and expenditures, including a list of the amount spent on each project funded, in whole or in part, by SDC revenues.
- Creation of an administrative appeals procedure, in accordance with the legislation, whereby a citizen or other interested party may challenge an expenditure of SDC revenues.

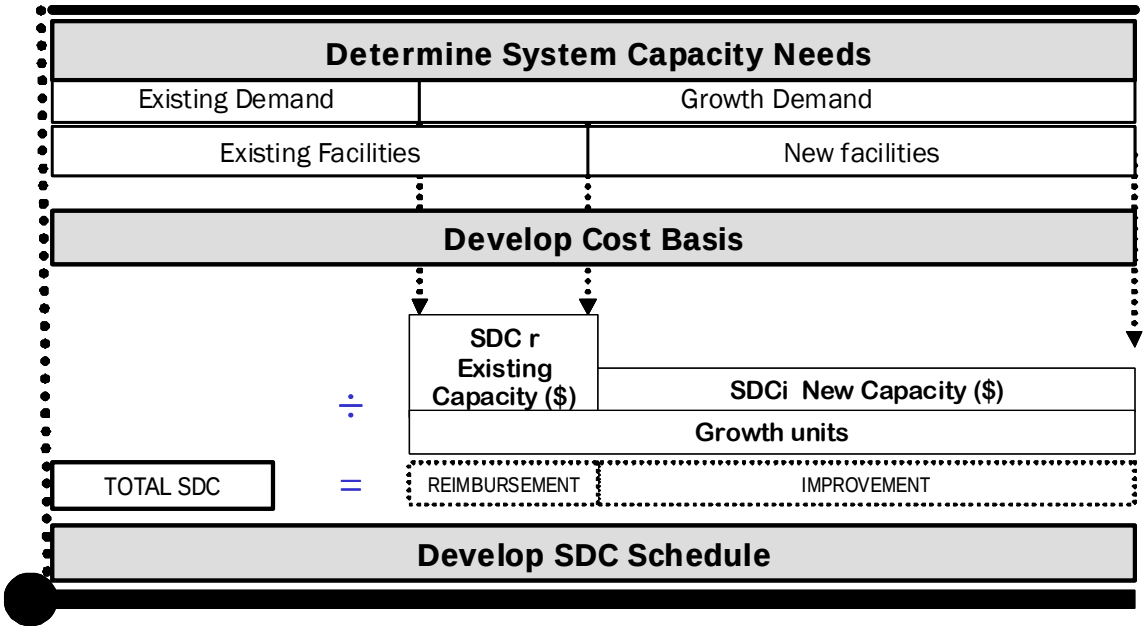
The provisions of the legislation are invalidated if they are construed to impair the local government's bond obligations or the ability of the local government to issue new bonds or other financing.

Overview of Methodology

The general methodology used to calculate water and wastewater SDCs is illustrated in **Figure 1**. It begins with an analysis of system planning and design criteria to determine growth's capacity needs, and how they will be met through existing system available capacity and capacity expansion. Then, the capacity to serve growth is valued to determine the "cost basis" for the SDCs, which is then spread over the total growth capacity units to determine the system wide unit costs of capacity. The cost basis is divided by the total growth units to be served by both available and new capacity, in order to establish a weighted average cost of capacity. The final step is to determine the SDC schedule, which identifies how different developments will be charged, based on their estimated capacity requirements.

[8] ORS 223.304.8
[9] ORS 223.304.7.a

Figure 1 – Overview of SDC Methodology



SECTION 2

Water SDC Methodology

This section presents the water SDC calculations based on the general methodology and requirements presented in the previous section, and the City's most recent Water System Master Plan Amendment (May 2007).

Background

The City last updated its water and wastewater SDCs in 1998. Following a three-year phase-in of the new fees, the SDCs have been updated annually for inflation, as estimated by the Engineering News Record (ENR) Construction Cost Index (3-Cities Average – Seattle, San Francisco, and Los Angeles). While the inflationary adjustments have helped capture some of the increases in infrastructure investment costs since adoption of the existing SDCs, they have not fully captured actual costs of projects constructed. Furthermore, the City has adopted amendments to its Water System Master Plan which include revised cost estimates and additional facilities needed to serve growth. The most recent amendments to the Water System Master Plan were adopted in May 2007, and serve as the source for the SDC Project List, in accordance with the SDC statutes.

In addition to cost changes, the water and wastewater systems have also experienced changes in customer usage. In general usage requirements per capita have decreased over the past ten years, reflecting water conservation, the economy, and other factors.

Determine Capacity Needs

Planning Assumptions

Capacity requirements are defined by the following system design criteria, as initially established by the 1994 Water System Master Plan:

- Maximum Day Demand (MDD) - The highest daily recorded rate of water production in a year.
- Peak Hour Demand (PHD) – The highest total water use experienced by the water supply system, measured on an hourly basis. Future PHD is estimated based on a peaking factor of 1.3 times MDD.
- Storage Requirements – Storage facilities provide three functions: operational (or equalization) storage, and storage for emergency and fire protection needs. The ratio of total future storage needs to future MDD is 1.55.

Table 2-1 presents a summary of the planning assumptions for the water system under Urban Growth Boundary (UGB) build-out conditions in 2055; based on the City's Water Management and Conservation Plan (January 2007).

Table 2-1
City of Salem
Water System Planning Assumptions

	Existing (2005)			Future (2055)			Growth		
Capacity Parameter	System-wide	w/out Turner	W/out Wholesale & Industrial	System-wide	W/out Turner	W/out Wholesale & Industrial	System-wide	W/out Turner	W/out Wholesale & Industrial
Max Day Demand (mgd) 1/	52.68	51.78	38.35	91.65	89.09	62.43	38.97	37.31	24.08
Peak Hour Demand (mgd) 1/	68.48	67.31	49.85	119.15	115.82	81.16	50.66	48.50	31.30
Storage Requirements (mg) 2/	91.00	90.30	81.03	142.36	140.48	122.68	51.36	50.18	41.65

1/ Water Management and Conservation Plan

2/ Modeling data (includes both Franzen and service storage volumes). See Table A-2 in Appendix A

Current MDD requirements are about 52 million gallons per day (mgd) for the entire system. In addition to serving customers within the City of Salem, the City's water system serves customers in the Suburban East Salem Water District and the City of Turner on a wholesale basis. The MDD requirements of the wholesale customers are currently 3.8 mgd. Industrial users currently represent about 10.5 mgd of MDD requirements. Both wholesale and industrial customers have service requirements that differ from the City's other retail customers (e.g., residential and commercial customers). Specifically, neither wholesale nor industrial customers are served by the City's distribution system (including distribution pipes and pump stations). Furthermore, the City of Turner is not served by the lower transmission or distribution storage systems.

Because industrial and wholesale customers are not served by certain types of facilities, it is necessary to consider the growth needs of the system for the following customer groupings and facilities:

1. System-wide growth needs: used for sizing source, treatment, upper transmission, and Franzen reservoir facilities.
2. Future growth without Turner: used for sizing lower transmission and distribution storage facilities.
3. Future growth without wholesale (both Turner and East Salem) and industrial customers: used for sizing distribution pipes and pump stations.

The total system demands under MDD conditions are projected to be 91.65 mgd at the end of the planning period (2055). Existing system users' MDD capacity requirements are 52.68 mgd. The MDD capacity required by growth on a system-wide basis is expected to be 38.97 mgd, and represents 42.5 percent of the future total MDD. Growth over the planning period exclusive of Turner's MDD is estimated to be 37.31 mgd. Growth exclusive of wholesale and industrial use is projected to be 24.1 mgd. In terms of PHD, future total capacity requirements are projected to be 119.15 mgd, with system-wide growth PHD requirements expected to be 50.66 mgd (42.5 percent of future PHD). Storage requirements are currently about 91 million gallons (mg), and are expected to increase to 142.36 mg during the planning period. Growth storage requirements are 51.4 mg system-wide, and 50.2 mg exclusive of Turner requirements.

Available Capacity for Growth

As indicated previously, Oregon SDC law allows for inclusion of a reimbursement fee, provided that existing system capacity can be demonstrated. Current system capacities and available capacities vary among system components, as shown in **Table 2-2**. Source and treatment (Geren Island) facility capacities were evaluated on a system-wide basis. The current firm capacity of the treatment system is 78 mgd, compared to existing customers' demand requirements of 52.7 mgd (based on system-wide MDD). Therefore, the available capacity in the treatment system is 25.3 mgd (32.5 percent). Additional capacity of 13.65 mgd will be needed from future improvements to meet the full growth needs through 2055. Water rights are sufficient to meet demands beyond 2055, assuming they can be fully utilized. Growth through 2055 is allocated only 26.5 percent, based on MDD requirements.

Table 2-2
City of Salem
Water System Available Capacity Analysis by Component

	Design Criteria	Capacity Units	Capacity	Existing Requirements	2055 Growth Capacity Quantity	%
Source & Treatment						
Geren Island	MDD	mgd	78.0	52.7	25.3	32.5%
Water Rights (1)	MDD	mgd	147.0	52.7	39.0	26.5%
Transmission						
Upper						
Existing (2)	MDD		66.0	52.7	13.3	0.0%
CWIP (1) (3)	MDD	Mgd	75.0	16.0	38.9	52.0%
Lower (2)	PHD	mgd	66.0	67.3	(1.3)	0.0%
Pumping (4)	MDD	mgd	53.7	52.3	1.4	2.7%
Storage (4)						
Franzen	Req Storage	Mg	92.2	67.1	25.1	27.2%
Service	Req Storage	Mg	44.2	45.7	(1.5)	(3.3)%
Distribution (1) (3)	PHD	mgd	149.1	49.9	31.30	21.0%

(1) Growth beyond 2055 is responsible for a portion (38%) of capacity; the SDC cost basis is limited to only the amount needed for growth within the planning period.
(2) Existing capacity will be replaced by future improvements
(3) See Table 2-5
(4) Based on analysis of individual pressure zones
CWIP = Construction Work in Progress

As shown in **Table 2-2**, capacity in the transmission system is considered separately for 'upper' transmission (Geren Island to Franzen Reservoir), and 'lower' transmission (Franzen Reservoir to the distribution system). As mentioned previously, the City of Turner receives service from treatment and upper transmission facilities only. While there is some available capacity within the upper transmission system, a significant portion of existing capacity will be replaced by planned improvements, some of which are currently under construction. Therefore, the reimbursement fee for upper transmission is limited to construction work in progress (CWIP), with growth's share based on an analysis of expansion needs (addressed later under "Improvement Fee Cost Basis"). Future expansion of the lower transmission system will eventually be needed. However, it is not envisioned to be implemented during the planning period, and is therefore not included in the cost basis for this SDC methodology.

Available capacity for pump stations and reservoirs was evaluated for individual pressure zones. **Table 2-2** presents the system-wide values based on the weighted average of each pressure zone, since the City develops its SDC on a system-wide basis rather than having separate SDCs for each service zone. The analysis by pressure zone is presented in Appendix A (Tables A-3 and A-4). As shown in **Table 2-2**, pumping available capacity is limited to 2.7 percent. Available Franzen Reservoir capacity for growth within the planning period is estimated to be 27.2 percent; no additional capacity improvements to Franzen are required. Overall, there is no existing available capacity for storage reservoirs; significant improvements are planned to expand distribution storage capacity.

For the distribution system, existing and future capacity expansion is allocated to existing customers and future growth (including growth beyond the 2055 planning period), based

on relative peak hour demands. Overall planned capacity in the distribution system is assumed to equal the transmission system (exclusive of wholesale and industrial capacity needs). Growth within the 2055 planning period represents 21.0 percent of future PHD (see additional discussion under "Improvement Fee Cost Basis" and **Table 2-5**).

Develop Cost Basis

As demonstrated in **Tables 2-1** and **2-2**, the capacity needed to serve new development will be met through a combination of existing available capacity and planned system improvements. The reimbursement fee is intended to recover the costs associated with the growth-related (or available) capacity in the existing system. The improvement fee is based on the costs of capacity-increasing future improvements needed to meet the remaining demands of growth. The value of capacity needed to serve growth in aggregate within the planning period (adjusted for contributions, historical interest, and bond management costs) is referred to as the SDC "cost basis".

Reimbursement Fee Cost Basis

Table 2-3 shows the reimbursement fee cost basis calculation, which begins with the net book value of assets as of June 30, 2006. The book value is then reduced by developer contributed assets, net of developer reimbursements for oversizing.

According to Oregon law, the reimbursement fee may include facilities already constructed or under construction. Therefore, CWIP is added to the book value for purposes of developing the reimbursement SDC cost basis. Open projects are shown in detail by system component in Appendix A (Table A-5).

A portion of the fixed assets have been funded by revenue bond proceeds. The costs of debt funded facilities include bond management and interest costs. Historical debt service schedules and expenditures were reviewed to identify actual management and interest costs for each bond issue. The project expenditures for each issue were used to determine water system functional allocations. A summary of the historical costs and functional percentages for each revenue bond issue is provided in Appendix A (Table A-6). As shown in **Table 2-3**, historical water revenue bond interest costs total $23.2 million, and bond/CIP management costs were $2.7 million. These costs are added to the asset values by functional component to determine the adjusted value (about $200 million) shown in **Table 2-3**.

The adjusted asset value that is included in the cost basis is limited to the portion of capacity by component that is available for growth within the planning period, assuming assets will not be replaced. **Table 2-2** showed the available capacity analysis, which provides the cost basis percentages for each system component, except for the transmission system. The majority of the transmission system value is associated with the upper and lower transmission systems. Due to planned facility replacements and existing capacity restrictions, the SDC cost basis is limited to growth's share of the current CWIP associated with the upper transmission system (see **Table 2-5** and "Improvement Fee Cost Basis" that follows).

Table 2-3

City of Salem

Water Reimbursement Fee Cost Basis

Component	Book Value (1)	Developer Funded (2)	CWIP (3)	Bond/CIP Mgmt (4)	Historical Interest (4)	Adjusted Value	SDC Cost Basis	
							$	%
Source & Treatment								
Geren Island	$33,503,837		$2,106,003	$1,441,875	$12,326,078	$49,377,792	$16,028,791	32.5%
Water Rights	$253,981					$253,981	$107,994	42.5%
Transmission	$22,450,099	$0	$32,669,074	$392,605	$2,725,470	$58,237,249	$20,190,411	0%
Upper/Lower (existing)	$14,848,848			$0	$0	$14,848,848	$0	0%
Upper (CWIP)	$0		$32,669,074	$392,605	$2,725,470	$35,787,150	$18,595,003	52.0%
System Transmission (5)	$7,601,251					$7,601,251	$1,595,408	21.0%
Pumping	$8,176,718	($243,929)	$852,000	$63,629	$1,397,210	$10,733,485	$284,978	2.7%
Storage								
Franzen			$15,444,001	$362,655	$3,492,287	$19,298,943	$5,250,527	27.2%
Service	$14,533,960	$2,112,718	$4,899,983	$277,318	$1,724,406	$19,322,950	$0	0.0%
Distribution	$68,002,931	$37,778,401	$11,403,928	$206,827	$1,502,550	$43,337,835	$9,096,070	21.0%
Total	$146,921,525	$39,647,190	$67,374,990	$2,744,909	$23,168,001	$200,562,235	$50,958,770	25.4%

(1) Historical cost less accumulated depreciation through June 30, 2006
(2) Net of developer reimbursements
(3) Construction work in progress (see Appendix A, Table A-5 for a complete list of projects)
(4) Based on actual management and interest costs associated with Bonds A through I (see Appendix A, Table A-6 for more detail)
(5) Allocated in the same manner as distribution from Table 2-2

The total reimbursement cost basis is about $51 million, including $16.1 million for source and treatment, $20.2 million for transmission, about $0.3 million for pumping, $5.3 million for Franzen storage, and $9.1 million for distribution. Considering a total fixed asset value of about $200 million system-wide, the value allocated to growth is 25.4 percent.

Improvement Fee Cost Basis

The cost of future capacity-increasing improvements (the improvement fee cost basis) is presented in summary form in **Table 2-4**. The development of the improvement fee cost basis begins with a review of the planned capital improvements from the City's recently adopted Water System Master Plan Amendment (May 2007). From the Master Plan list of improvements, only those improvements that increase capacity are considered for inclusion in the SDC Project List; repair and replacement projects that do not provide new capacity are excluded. The SDC project list is presented in detail in Table A-1 in Appendix A.

Each improvement on the project list was reviewed to determine the portion of costs that expand capacity for growth. Of the growth improvements, only the portion of costs needed to serve growth within the 2055 planning period are included in the SDC cost basis; extra capacity beyond 2055 is not included. Furthermore, adjustments are made to the project costs for any CWIP (included in the reimbursement fee cost basis), which in this case is limited to upper transmission facility construction. Anticipated developer funded facilities are also excluded from the cost basis.

Capacity expansion improvement costs are allocated to growth in proportion to growth's projected share of the planned capacity expansion. **Table 2-5** summarizes the derivation of improvement cost allocation percentages for each system component. For treatment (Geren Island), the project list includes two additional filters; one of which is needed in part to meet the needs of growth through 2055. The planned filters will expand capacity by 52 mgd. As indicated in **Table 2-1**, growth capacity needs through 2055 are 38.97 mgd. Existing available treatment capacity is 25.3 mgd (**Table 2-2**), leaving an additional 13.65 mgd required from improvements. The remaining capacity provided by the new filters (38.35 mgd or 74 percent) will serve growth beyond 2055; therefore, 74 percent of the costs are excluded from the cost basis.

The Water System Master Plan Amendment identifies a Willamette River intake that will be needed to provide treatment of water from future supplemental water rights. The improvement provides enhanced system reliability in the case of curtailment of water from the North Santiam River. Planned capacity is based on projected growth beyond 2055 (100 mgd total). The timing for this project is highly speculative; and very much dependent on the City's negotiations with the U.S. Army Corps of Engineers and National Marine Fisheries Service (NMFS) related to the City's Water Withdrawal Plan and completion of the upper transmission improvements. Because the intake project's time schedule cannot be realistically predicted at this time, the project remains identified by the Water System Master Plan Amendment, but is not included in the improvement cost basis for this SDC methodology.

Other treatment improvements include performance improvements to the treatment system, which are allocated to growth in proportion to existing available capacity at Geren Island (32.5 percent, see **Table 2-2**).

Table 2-4

City of Salem

Water Improvement Fee Cost Basis

	Total Cost (1)	Less CWIP (2)	Cost Net Of CWIP	Growth Cost	Growth thru 2055 (3) $	Growth thru 2055 (3) %	Bond/CIP Mgmt (4)	Bond Issuance (4)	Net SDC Cost
							2%	3%	
Source & Treatment	$34,300,000		$34,300,000	$33,286,923	$9,096,923	27.3%	$181,938	$272,908	$9,551,769
Geren Island	$32,800,000		$32,800,000	$32,800,000	$8,610,000	26.3%	$172,200	$258,300	$9,040,500
Intake	$0		$0	$0	$0	0%	$0	$0	$0
Other	$1,500,000		$1,500,000	$486,923	$486,923	32.5%	$9,738	$14,608	$511,269
Transmission									
Upper	$75,591,000	$32,669,074	$42,921,926	$33,922,011	$22,302,233	52.0%	$446,045	$669,067	$23,417,344
Lower	$144,000		$144,000	$142,680	$59,291	41.6%	$1,186	$1,779	$62,255
Pumping	$35,810,000		$35,810,000	$25,103,530	$25,103,530	70.1%			$25,103,530
Storage									
Franzen	$0		$0	$0	$0	0.0%	$0	$0	$0
Service	$70,870,000		$70,870,000	$61,477,900	$61,477,900	86.7%	$1,229,558	$1,844,337	$64,551,795
Distribution (5)	$80,823,160		$80,823,160	$16,963,770	$16,963,770	21.0%			$16,963,770
Total	$297,538,160	$32,669,074	$264,869,086	$170,896,815	$135,003,647	51.0%	$1,858,727	$2,788,090	$139,650,464

(1) See Table A-1 in Appendix A for complete list of projects.

(2) Includes on CWIP that is also included on project list, from Table 2-3. Other CWIP from Table 2-3 is in addition to project list.

(3) Percentages from Table 2-5. Capacity for growth beyond the planning window is excluded.

(4) Debt funded facilities assumed to exclude pumping and distribution improvements.

(5) Growth costs exclude developer funded improvements

Table 2-5
City of Salem
Determination of Water System Improvement Allocation Percentages

	Expansion Total Capacity	Existing		Growth (thru 2055)		Growth (beyond)	
		Amt.	%	Amt.	%	Amt.	%
Source & Treatment							
Geren Island	52.00	-	0.0%	13.65	26.3%	38.35	74%
Transmission							
Upper							
36"/69"	75.00	16.00	21.3%	38.97	52.0%	20.03	27%
Lower	117.80	1.31	1.1%	48.50	41.2%	67.98	58%
Pumping	70.91	21.20	29.9%	49.71	70.1%	-	0%
Storage (Service)	25.62	3.40	13.3%	22.22	86.7%	-	0%
Distribution	*149.14*	*49.85*	*33.4%*	*31.30*	*21.0%*	67.98	46%

The capacity expansion planned for the upper transmission system totals 75 mgd, but includes replacement of 16 mgd of existing capacity needed to serve current system users. Of the 59 mgd of new capacity, growth within the 2055 planning window requires 38.97 mgd (based on projected MDD). Therefore, the improvement fee cost basis includes 52 percent of the total upper transmission improvement costs. Lower transmission system costs – limited to minor near-term expansion projects -- are allocated to growth within and beyond the planning period in proportion to projected PHD, of which growth through 2055 (net of Turner demands) represents 48.5 mgd (from **Table 2-1**), or 41.2 percent of the total capacity to be added (117.8 mgd.) As mentioned previously, future expansion of the lower transmission system will eventually be needed. However, it is not envisioned to be implemented during the planning period, and is therefore not included in the cost basis for this SDC methodology.

Pumping and storage improvements were evaluated on an individual pressure zone basis. Projects in pressure zones with existing deficiencies were allocated between existing and future customers in proportion to capacity needs. All improvements have been sized for capacity needs within the 2055 planning period. Overall, growth is allocated 70 percent of pumping improvements, and almost 87 percent of storage improvements. Table A-1 in Appendix A provides detailed information on the allocation percentages for each planned reservoir and pump station.

As discussed previously, distribution system costs are allocated to existing customers and future growth (including growth beyond the 2055 planning period), based on relative PHD. Overall, planned capacity in the distribution system is assumed to equal the future lower transmission system (exclusive of transmission capacity for industrial and East Salem demands, since these customers are not served by the distribution system). As shown in **Table 2-5**, total future capacity is estimated to be 149.1 mgd (183.8 total future lower

transmission capacity, less 26.7 mgd capacity for industrial and East Salem)[10]. Non-wholesale and industrial growth in PHD within the 2055 planning period is 31.3 mgd (from **Table 2-1**), which represents 21.0 percent of future PHD.

The total improvement fee cost basis is about $139.7 million.

Two important policies relative to the project list that serves as the basis for the improvement fee calculations warrant comment:

1. As set forth by Salem Revised Code (SRC) 66.110 and 120, the specific location, size and capacity of utility improvement projects will be determined with reference to any one or combination of the following: 1) the applicable Master Plan or, 2) specific engineering capacity studies approved by the Director of Public Works. With respect to facilities not shown in the Master Plan but necessary to link to adequate facilities, the location, size and capacity of such facilities to be constructed or linked to shall be determined by the Development Review Committee**.** SRC 66.040 further defines the Development Review Committee as being composed of city management staff and appointed by the city manager from the departments of public works, community services, fire, or community development.

2. As set forth by the most recent Water System Master Plan Amendment, the pipe sizes identified in the Master Plan for the individual projects reflect the required minimum pipe size at the minimum acceptable slope (per City of Salem Public Works Design Standards) to convey the projected design flows under Comprehensive Plan build out conditions. Pipe sizes will be evaluated and refined as necessary by each project's design engineer during the conceptual and detailed final design for each project. The ultimately selected pipe size may be different than that shown if prevailing site conditions and projected water demands allow such a modification as ultimately determined by the design engineer to the satisfaction of the Public Works Director.

Develop SDC Schedule

System-wide unit costs of capacity are determined by dividing the reimbursement fee and improvement fee cost bases (**Tables 2-3** and **2-4**), by the aggregate growth-related capacity requirements defined in **Table 2-1**. These unit costs are then applied to the capacity requirements per meter equivalent (based on a ¾" meter which is the smallest meter size now installed by the City) to determine the fee per meter equivalent. The SDC is then scaled up or down for each development type, based on estimated capacity requirements associated with the installed meter. For purposes of this Methodology Report, the scaling ratios were based on the recommended design criteria for the various types and sizes of meters as set forth by the American Water Works Association (AWWA) Manual of Water Supply Practices, *Sizing Water Service Lines and Meters*, AWWA M22.

[10] Although the costs of expanding the lower transmission system are excluded from this SDC analysis; the future transmission capacity estimate (used to estimate future distribution capacity) includes the additional capacity from the planned improvements in the Master Plan Amendment, as it is assumed that the distribution system is sized for the maximum future planned capacity.

Meter Equivalent Capacity Requirements

Table 2-6 shows the determination of capacity requirements per meter equivalent for each design criteria. The analysis begins with the system-wide MDD of 52.7 mgd, which is then divided by the number of 3/4-inch meter equivalents currently connected to the system. The MDD per meter equivalent is estimated to be 798 gpd.

Table 2-6
City of Salem
Water System Capacity Requirements per Meter Equivalent

Element		mgd	gpd
System wide MDD		52.7	52,680,000
Meter Equivalents	66,054		
MDD per Meter Equivalent		0.000798	798
Peak Hour Factor	1.30	0.001037	1,037
Storage Factor	1.55	0.001239	1,239

The capacity requirements for PHD and storage reflect the MDD requirements multiplied by the ratio of each to the system-wide MDD. The ratio of PHD to MDD is 1.3, and storage requirements are 1.55 times MDD.

Reimbursement Fee

Table 2-7 shows the reimbursement fee calculation by system component. The cost basis figures by component from **Table 2-3** are divided by growth capacity requirements from **Table 2-1** to determine the system-wide unit costs of capacity.

Table 2-7
City of Salem
Water Reimbursement Fee Calculation

Item	Total	System Component						
		Source & Treatment (1)	Upper Transmission (1)	Lower Transmission (2)	Pump (3)	Franzen Storage (1)	Distribution Storage (2)	Distribution (3)
Reimbursement Fee Cost Basis	$50,958,770	$16,136,785	$18,595,003	$0	$284,978	$5,250,527	$0	$10,691,477
Growth Capacity Requirements		39.0	39.0	48.5	24.1	51.36	41.7	31.3
Unit Cost		$414,082	$477,162	$0	$11,835	$102,231	$0	$341,557
Capacity Requirements per Unit		0.000798	0.000798	0.001037	0.000798	0.001239	0.001239	0.001037
Reimbursement Fee per Unit	$1,201	$330	$381	$0	$9	$127	$0	$354

(1) Growth capacity requirements reflect system-wide needs
(2) Growth capacity requirements reflect growth needs without City of Turner
(3) Growth capacity requirements reflect growth needs without wholesale and industrial customers

Table 2-8
City of Salem
Water Improvement Fee Calculation

Item	Total	System Component					
		Source & Treatment (1)	Upper Transmission (1)	Lower Transmission (2)	Pump (3)	Distribution Storage (2)	Distribution (3)
Improvement Fee Cost Basis	$139,650,464	$9,551,769	$23,417,344	$62,255	$25,103,530	$64,551,795	$16,963,770
Growth Capacity Requirements		38.97	38.97	48.50	24.08	50.18	31.30
Unit Cost		$245,106	$600,907	$1,284	$1,042,565	$1,072,604	$541,935
Capacity Requirements per Unit		0.000798	0.000798	0.001037	0.000798	0.001239	0.001037
Improvement Fee Per Unit	$3,663	$195	$479	$1	$831	$1,594	$562

(1) Growth capacity requirements reflect system-wide needs
(2) Growth capacity requirements reflect growth needs without City of Turner
(3) Growth capacity requirements reflect growth needs without wholesale and industrial customers

As indicated previously, industrial and wholesale customers are not served by certain types of facilities. Therefore, the aggregate growth requirements used for determining the unit costs of capacity are reflective of the following:

(1) System-wide growth requirements: used for source, treatment, upper transmission, and Franzen reservoir facilities.

(2) Growth without City of Turner: used for distribution storage facilities.

(3) Growth without wholesale and industrial customers: used for distribution pipes and pump stations.

The unit costs of capacity by component are then multiplied by the capacity requirements per meter equivalent to determine the reimbursement fee per unit.

The total reimbursement fee per unit is $1,201, including $330 for source and treatment facilities, $381 for upper transmission facilities, $9 for pump facilities, $127 for Franzen Reservoir facilities, and $354 for distribution facilities.

Improvement Fee

The improvement fee calculation is shown in **Table 2-8 (previous page)**. Growth improvement costs from **Table 2-4** are distributed across the aggregate growth capacity requirements through 2055 (reflecting the levels of service provided by each component as discussed above for the reimbursement fee); and the unit costs of capacity are multiplied by the capacity requirements per meter equivalent to determine the improvement fee per unit. The resulting cost per unit is $3,663, including $195 for source and treatment improvements, $479 for transmission improvements (upper), $1 for transmission improvements (lower), $831 for pump improvements, $1,594 for storage improvements, and $562 for distribution improvements.

Compliance Charge

Local governments are entitled to include in the SDCs, a charge to recover costs associated with complying with the SDC law. Compliance costs include those related to developing the SDC methodology and project list (i.e., a portion of master planning costs), and staff time related to administration of SDC credits, accounting and reporting. **Table 2-9** shows the calculation of the compliance charge per unit, which is estimated to be $182.

Table 2-9
City of Salem
Water Compliance Charge

Component	Amortization (Years)	Total	Growth	Annualized
SDC Methodology	5	$28,000	100%	$28,000
Master Planning (1)	10	$1,596,000	43%	$67,863
SDC Administration (2)	1	$84,180	100%	$84,180
Total Annual Costs		$1,708,180		$180,043
Estimated Annual meter equivalents				991
Admin Charge per Meter Equivalent				**$182**

(1) Water Management Plan costs; allocated in proportion to 2055 MDD
(2) From FY2007/08 Budget

Existing Deficiency Credit

A credit to the combined water SDC is included, to recognize the contribution by new development toward:

1. existing debt service associated with current "used" capacity, and
2. future SDC project list costs (both debt service and cash funding) associated with providing capacity to serve existing customers.

Once connected to the system, new customers will pay monthly user fees that are used to retire existing and future debt and fund capital improvements that will benefit existing customers. A credit is provided – equal to the present value of the future payments per meter equivalent – to recognize these future contributions.

Table A-7 in Appendix A provides a summary of the financing assumptions which form the basis of the credit. As indicated in Table A-7, the SDC project list (Table A-1) includes about $66.7 million of costs related to capacity for existing customers. In addition, existing debt service costs of about $35 million are associated with existing 'used' capacity (the growth percentages by revenue bond issue for existing debt are shown in Table A-6). Annual rate-supported project list costs are projected based on the estimated timing of debt funded projects (from the project list and shown in Table A-7) and existing debt service schedules. Cash funded projects are assumed to be distributed evenly over each year of the planning period.

Projected reimbursement SDC revenue is deducted from the total potential rate supported project list costs to estimate the annual rate contribution to SDC project list costs and existing debt service. The annual rate contribution is divided by the total number of meter equivalents projected for each year. The credit is equal to the present value of the future stream of rate costs per meter equivalent. As shown in **Table 2-10**, the credit for 2008 is $435 per meter equivalent.

Combined Fee

As shown in **Table 2-10**, the total SDC per non-industrial meter equivalent is $4,864, including the reimbursement component of $1,201, the improvement component of $3,663, and the adjustments. **Table 2-10** also shows the existing SDCs per equivalent dwelling unit (EDU): $4,184 for non-industrial.

Table 2-10
City of Salem
Combined Water SDC per Meter Equivalent

Component	Amount
Reimbursement SDC	$1,201
Improvement SDC	$3,663
Combined SDC per Meter Equivalent	$4,864
Adjustments	
Debt Credit	($435)
Compliance Charge	$182
Total SDC per Meter Equivalent	**$4,611**
Current SDC per EDU (non-industrial)	*$4,184*

The combined SDC per meter equivalent is the total fee that a development with a ¾" meter would pay. Standard hydraulic equivalency tables are used to calculate the SDC for developments with larger meters. As mentioned previously, for purposes of this Methodology Report, the scaling ratios were based on the recommended design criteria for the various types and sizes of meters as set forth by the AWWA.

Water SDCs by meter size are shown in **Table 2-11** on the following page. SDCs for industrial and wholesale customers reflect the different levels of service provided. The credit is also prorated, as these customers are charged differential user rates.

Policy Issues

The City may select among different methodology options in developing SDCs. The following options (which are basically local policy decisions) associated with SDCs, were considered in addition to the methodology and calculations described above:

1. Existing system valuation based on original cost (as opposed to the previously used depreciated original cost): **(Increases SDCs by about $300 per meter equivalent)**. Alternatively, the reimbursement fee could be based on replacement cost, which could potentially increase the SDCs by about $1,000 (doubling the reimbursement fee). The City elected to retain the existing book value based on depreciated original cost.

2. Exclusion of historical interest costs: **(Decreases SDCs by about $170 per meter equivalent).** Historical interest costs are only about 12 percent of the adjusted asset value for purposes of developing the reimbursement SDC. The City elected to include the historical interest cost as part of the reimbursement SDC.

3. Exclusion of Bond/CIP Management Costs: **(Decreases SDCs by $170 per meter equivalent).** Historical and prospective Bond/CIP Management costs are only about 5 percent of the cost bases. The City elected to include these costs (2% for Bond/CIP Management and 3% for Bond Issuance) as part of the improvement SDC.

4. Residential SDC Assessment Basis: (**no change in SDC**). The revised SDC schedule presented in **Table 2-11** is based on water meter size for all developments. The City's current assessment basis for multifamily and single family development is on a dwelling unit basis. Use of meter size for all developments is the most common assessment basis, and enhances administration of SDCs for mixed use developments (because residential and commercial users are assessed on the same basis). The City elected to base the SDC schedule for both water and wastewater on water meter size for all developments.

Table 2-11
City of Salem
Revised Water SDC Schedule

Meter Size	Ratio	SDCi	SDCr	Compliance	Credit	**Total**
Compound						
5/8"	1	$3,663	$1,201	$182	($435)	**$4,611**
3/4"	1	$3,663	$1,201	$182	($435)	**$4,611**
1"	1.7	$6,227	$2,042	$309	($739)	**$7,839**
1.5"	3.3	$12,088	$3,963	$600	($1,435)	**$15,216**
2"	5.3	$19,414	$6,365	$963	($2,304)	**$24,438**
3"	10.7	$39,195	$12,851	$1,944	($4,652)	**$49,338**
4"	16.7	$61,174	$20,057	$3,035	($7,261)	**$77,004**
6"	33.3	$121,981	$39,993	$6,051	($14,479)	**$153,547**
Turbine						
4"	21	$76,925	$25,221	$3,816	($9,131)	**$96,831**
6"	46.7	$171,067	$56,087	$8,486	($20,305)	**$215,335**
8"	80	$293,048	$96,080	$14,537	($34,784)	**$368,881**
10"	126.7	$464,115	$152,167	$23,023	($55,089)	**$584,216**
			Industrial & E. Salem			
Compound						
5/8"	1	$2,270	$837	$182	($110)	**$3,179**
3/4"	1	$2,270	$837	$182	($110)	**$3,179**
1"	1.7	$3,859	$1,424	$309	($187)	**$5,404**
1.5"	3.3	$7,490	$2,764	$600	($363)	**$10,490**
2"	5.3	$12,030	$4,438	$963	($583)	**$16,848**
3"	10.7	$24,286	$8,961	$1,944	($1,177)	**$34,014**
4"	16.7	$37,905	$13,985	$3,035	($1,837)	**$53,087**
6"	33.3	$75,583	$27,887	$6,051	($3,664)	**$105,857**
Turbine						
4"	21	$47,665	$17,586	$3,816	($2,310)	**$66,757**
6"	46.7	$105,997	$39,109	$8,486	($5,138)	**$148,454**
8"	80	$181,580	$66,995	$14,537	($8,801)	**$254,311**
10"	126.7	$287,577	$106,104	$23,023	($13,939)	**$402,765**
			Turner			
Compound						
5/8"	1	$675	$837	$182	($110)	**$1,584**
3/4"	1	$675	$837	$182	($110)	**$1,584**
1"	1.7	$1,147	$1,424	$309	($187)	**$2,693**
1.5"	3.3	$2,227	$2,764	$600	($363)	**$5,227**
2"	5.3	$3,576	$4,438	$963	($583)	**$8,395**
3"	10.7	$7,220	$8,961	$1,944	($1,177)	**$16,947**
4"	16.7	$11,268	$13,985	$3,035	($1,837)	**$26,451**
6"	33.3	$22,468	$27,887	$6,051	($3,663)	**$52,743**
Turbine						
4"	21	$14,169	$17,586	$3,816	($2,310)	**$33,261**
6"	46.7	$31,510	$39,109	$8,486	($5,137)	**$73,967**
8"	80	$53,978	$66,995	$14,537	($8,801)	**$126,710**
10"	126.7	$85,487	$106,104	$23,023	($13,938)	**$200,677**

SECTION 3

Wastewater SDC Methodology

This section presents the wastewater SDC calculations based on the general methodology and requirements presented in Section 1, and the City's recently completed Willow Lake Wastewater Treatment Plant Facilities Plan (September 2002) and more recent Wastewater Management Master Plan Amendment (January 2007).

Background

The City last updated its water and wastewater SDCs in 1998. Following a three-year phase-in of the new fees, the SDCs have been updated annually for inflation, as estimated by the Engineering News Record (ENR) Construction Cost Index (3-Cities Average – Seattle, San Francisco, and Los Angeles). While the inflationary adjustments have helped capture some of the increases in infrastructure investment costs since adoption of the existing SDCs, they have not fully captured actual costs of constructed projects. Furthermore, the City has adopted amendments to its Wastewater System Master Plan which include revised cost estimates and additional facilities needed to meet existing needs and serve growth. The most recent amendments to the Wastewater Management Master Plan were adopted in January 2007, and serve as the source for the SDC project list, in accordance with the SDC statutes.

In addition to cost changes, the water and wastewater systems have also experienced changes in customer usage. In general, usage requirements per capita have decreased over the past ten years, reflecting water conservation, the economy, and other factors.

Determine Capacity Needs

Planning Assumptions

The relevant design criteria for the wastewater system include the following:

- Average Dry Weather Flow (ADWF): the average flow at the Wastewater Treatment Plant (WWTP) during the dry weather season, usually defined as May through October. Used to estimate customer wastewater flows and associated loads.
- Peak Wet Weather Flow (PWWF): The highest flow at the plant sustained for one hour.
- Maximum Month Biochemical Oxygen Demand (BOD): The amount of oxygen required to biologically oxidize the organic material in the wastewater over a specified period of time during the food processing season.
- Maximum Month Total Suspended Solids (TSS): The particulate material suspended in the wastewater during the food processing season.

Table 3-1 presents a summary of the planning assumptions for the wastewater system through UGB build-out, based on the Willow Lake Wastewater Treatment Plant Facilities Plan. In addition to serving customers within the City of Salem, the City's wastewater system serves customers in the City of Keizer, the City of Turner, East Salem Service District, and portions of unincorporated Polk County (within the City's UGB).

Table 3-1
City of Salem
Wastewater System Planning Assumptions

	Existing (2005)			Future (Build-out)			Aggregate Growth		
Capacity Parameter	System-wide	W/out Keizer	W/out Keizer, E. Salem & Turner	System-wide	W/out Keizer	W/out Keizer, E. Salem & Turner	System-wide	W/out Keizer	W/out Keizer, E. Salem & Turner
Flows/Loads									
ADWF	32.5			46.0			13.5		
PWWF (mgd)	287.0	257.8	229.9	315.0	283.0	252.3	28.0	25.2	22.4
BOD (1,000 lbs/ day)	110	na	na	130	na	Na	20	na	na
TSS (1,000 lbs/ day)	70	na	na	90	na	Na	20	na	na

na – Not applicable because BOD and TSS are solely related to the Willow Lake WPCF and therefore, reflect system-wide needs.

System-wide ADWF was estimated to be 32.5 mgd in 2005. Current PWWF is estimated to be 287 mgd system-wide. Future conditions are estimated to be 46 mgd for ADWF and 315 mgd for PWWF. Growth during the planning period is 13.5 mgd for ADWF and 28 mgd for PWWF. System-wide BOD and TSS loadings are estimated to increase by 20,000 lbs/day each during the planning period.

Wholesale customers have service requirements that differ from the City's retail customers (e.g., residential and commercial customers). Specifically, wholesale customers are not served by the City's collection system (including collection pipes and pump stations). Because wholesale customers are not served by certain types of facilities, it is necessary to consider the growth needs of the system for the following customer groupings and facilities:

1. System-wide growth needs: used for sizing treatment facilities.
2. Future growth without wholesale customers (East Salem, Keizer and Turner): used for sizing collection and pumping facilities.
3. Future growth without Keizer: used for sizing interceptors.

Available Capacity for Growth

As indicated previously, Oregon SDC law allows for inclusion of a reimbursement fee, provided that existing system capacity may be demonstrated, and that the facilities will be used to meet future growth needs. Current system capacities and available capacities vary among system components, as shown in **Table 3-2**. As indicated in the table, available capacity is limited to the collection system – including pumps and sewer lines – since the majority of treatment facility assets are deficient in capacity to meet current design standards, or facilities will be replaced by the projects completed under the City's Capital

Improvement Program (CIP). Available capacity in the pump stations and collection lines was determined by computer hydraulic modeling analysis by tributary sub-basins, and major trunk lines, respectively. The weighted average available capacity for pumping is 26.9 percent, and for collection is 13.9 percent.

Table 3-2
City of Salem
Wastewater System Available Capacity Analysis by Component

Unit Process	Design Criteria	Capacity Units	Capacity	Existing Requirements	Available Capacity Total	%
Headworks	PWWF	mgd	84.00	287.00	(203.00)	-
Biosolids	BOD/TSS	lbs		Existing facilities to be replaced		
Disinfection	PWWF	mgd	84.00	287.00	(203.00)	-
Gravity Thickeners	PWWF	mgd		Existing facilities to be replaced		
Primary Clarifiers	PWWF	mgd		Existing facilities to be replaced		
Secondary Clarifiers	PWWF	mgd		Existing facilities to be replaced		
Wet Weather Treatment Facility	PWWF	mgd		Not an existing process; Phase1 is currently under construction		
Pumping (1)	PWWF	mgd				26.9%
Collection (2)	PWWF	mgd				13.9%

(1) Based on analysis of individual tributary sub-basins
(2) Based on analysis of pipe segments

Develop Cost Basis

As demonstrated in **Table 3-2**, the capacity needed to serve new development will be met through a combination of existing and planned system improvements (including Construction Work in Progress, CWIP) – planned improvements only for treatment, and a combination of existing and future facilities for collection and pumping. The reimbursement fee is intended to recover the costs associated with the growth-related (or available) capacity in the existing system (including CWIP). The improvement fee is based on the costs of capacity-increasing future improvements needed to meet the demands of growth. The value of capacity needed to serve growth in aggregate within the planning period (adjusted for contributions, historical interest, and bond/CIP management costs) is referred to as the SDC "cost basis".

Reimbursement Fee Cost Basis

Table 3-3 shows the reimbursement fee cost basis calculation, which begins with the net book value of assets as of June 30, 2006. The book value is then reduced by developer contributed assets, net of developer reimbursements for oversizing.

According to Oregon law, the reimbursement fee may include facilities already constructed or under construction. Therefore CWIP is added to the book value for purposes of developing the reimbursement SDC cost basis. Open projects include treatment, pumping, and collections system projects, and are shown in detail by system component in Appendix B (Table B-4).

Table 3-3
City of Salem
Wastewater Reimbursement Fee Cost Basis

	Book Value (1)	Developer Funded (2)	CWIP (3)	Bond/CIP Mgmt. (4)	Historical Interest (4)	Adjusted Value	Available Cap for Growth $	%
Land & ROW	$1,553,032		$0			$1,553,032	$394,966	25.4%
Treatment	$30,735,319			$180,615	$1,803,345	$32,719,279	$0	0.0%
Headworks			$43,885,844			$43,885,844	$5,319,496	12.1%
Wet Weather Treatment Facility			$38,972,262			$38,972,262	$5,196,302	13.3%
Interim Solids Facility			$471,750			$471,750	$89,633	19.0%
Perimeter Utility/Process Imp			$28,135,705	$41,506	$427,526	$28,604,736	$7,274,733	25.4%
Pumping	$18,506,989	-$479,189	$1,523,187	$441,384	$4,591,103	$25,541,852	$6,868,840	26.9%
Interceptors	$25,659,500		$0			$25,659,500	$3,572,251	13.9%
Collection	$64,989,451	$47,887,355	$14,103,594	$620,386	$8,262,095	$40,088,171	$5,580,975	13.9%
Total	$141,444,291	$47,408,166	$127,092,342	$1,283,891	$15,084,069	$237,496,428	$34,297,196	14.4%

(1) Historical cost less accumulated depreciation through June 30, 2006
(2) Net of developer reimbursements
(3) Construction work in progress; available capacity for growth based on growth's share of expansion needs per Table 3-5.
(4) Based on actual management and interest costs associated with Bonds A through I (see Appendix B, Table B-5 for more detail)

A portion of the fixed assets (including CWIP) have been funded by revenue bond proceeds. The costs of debt funded facilities include bond management and interest costs. Historical debt service schedules and expenditures were reviewed to identify management and interest costs for each bond issue. The project expenditures for each issue were used to determine wastewater system functional allocations. A summary of the historical costs and functional percentages for each revenue bond issue is provided in Appendix B (Table B-5).

As shown in **Table 3-3**, historical wastewater revenue bond interest costs total $15.1 million, and bond/CIP management costs were $1.3 million. These costs are added to the asset values by functional component to determine the adjusted value (about $237 million) shown in **Table 3-3**.

The adjusted asset value that is included in the cost basis is limited to the portion of capacity by component that is available for growth within the planning period, assuming assets will not be replaced. **Table 3-2** showed the available capacity analysis, which provides the cost basis percentages for collection and pumping. The reimbursement fee cost basis for treatment is limited to CWIP. Some of the CWIP (headworks, wet weather treatment facility, and interim solids facility) are part of larger projects that are included on the SDC project list (used to develop the improvement fee cost basis). For these facilities, the portion of costs included in the cost basis is reflective of growth's share of the future expansion needs (discussed in the following subsection). Perimeter utility/process improvements which support the overall treatment function are allocated between growth and existing customers in proportion to population.

The total reimbursement cost basis is about $34.3 million, including $0.4 million for land and right-of-way (also allocated in proportion to population), $17.8 million for CWIP related to treatment, $6.9 million for pumping, $3.6 million for interceptors, and $5.6 million for collection. Considering a total fixed asset value of about $237.5 million system-wide, the value allocated to growth is 14.4 percent

Improvement Fee Cost Basis

The cost of future capacity-increasing improvements (the improvement fee cost basis) is presented in summary form in **Table 3-4**. The development of the improvement fee cost basis begins with a review of the planned capital improvements from the adopted Willow Lake Wastewater Treatment Plant Facilities Plan (Facilities Plan) and Wastewater Management Master Plan Amendment. From the entire list of improvements, only those improvements that increase capacity are considered for inclusion in the SDC Project List; repair and replacement projects that do not provide extra capacity for growth are excluded. The SDC project list is presented in detail in Table B-1 in Appendix B. Each improvement on the project list was reviewed to determine the portion of costs that expand capacity for growth. Adjustments are made to the project costs for any CWIP (included in the reimbursement fee cost basis above), which in this case is limited to headworks, biosolids, perimeter utilities, administration/laboratory building, and wet weather treatment facility (WWTF) construction. Anticipated developer funded improvements (limited to collection and pumping facilities) are also excluded from the cost basis.

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Table 3-4
City of Salem
Wastewater Improvement Fee Cost Basis

	Total Cost (1)	Less CWIP (2)	Cost Net of CWIP	Growth Cost	Growth thru 2055 $	Growth thru 2055 %	Developer Funded (3)	Bond/CIP Mgmt	Bond Issuance	Net SDC Cost
Treatment								2%	3%	
Headworks	$114,015,200	$43,885,844	$70,129,356	$8,127,547	$8,127,547	100%		$162,551	$243,826	$8,533,924
Biosolids	$38,688,000	$471,750	$38,216,250	$7,261,088	$7,261,088	100%		$145,222	$217,833	$7,624,142
Disinfection	$13,624,000		$13,624,000	$1,771,120	$1,771,120	100%		$35,422	$53,134	$1,859,676
Gravity Thickeners	$3,224,000		$3,224,000	$290,160	$290,160	100%		$5,803	$8,705	$304,668
Primary Clarifiers	$32,266,832		$32,266,832	$3,516,608	$3,516,608	100%		$70,332	$105,498	$3,692,439
Secondary Clarifiers	$78,520,000		$78,520,000	$7,066,800	$7,066,800	100%		$141,336	$212,004	$7,420,140
WWTF	$63,648,000	$38,972,262	$24,675,738	$3,207,846	$3,207,846	100%		$64,157	$96,235	$3,368,238
Trickling Filters	$40,976,000		$40,976,000	$6,556,160	$6,556,160	100%		$131,123	$196,685	$6,883,968
Effluent Pump Station	$6,240,000		$6,240,000	$561,600	$561,600	100%		$11,232	$16,848	$589,680
Odor Control	$6,136,000		$6,136,000	$552,240	$552,240	100%		$11,045	$16,567	$579,852
Pumping	$23,250,000		$23,250,000	$13,445,800	$13,445,800	100%	$880,000	$268,916	$403,374	$13,238,090
Interceptors	$21,100,000		$21,100,000	$11,263,200	$11,263,200	100%	$0	$225,264	$337,896	$11,826,360
Collection	$84,010,000		$84,010,000	$76,826,100	$76,826,100	100%	$42,710,000			$34,116,100
Total	$525,698,032	$83,329,857	$442,368,175	$140,446,268	$140,446,268	100%	$43,590,000	$1,272,403	$1,908,605	$100,037,277

(1) See Table B-1 in Appendix B for complete list of projects.

(2) Includes only CWIP from Table 3-3 that is also included in the project list. Other CWIP from Table 3-3 is in addition to project list, so no deduction is warranted.

(3) Assumed to include 8” equivalent sewer lines

Projects that simply expand capacity are allocated to growth in proportion to growth's projected share of the planned capacity expansion. **Table 3-5** summarizes the derivation of improvement cost allocation percentages for each system component. As was indicated in **Table 3-2**, the existing system has significant deficiencies in terms of PWWF capacity, such that a large portion of improvements designed to handle PWWFs are allocated to existing customers. Growth needs are limited to 12-13 percent of PWWF expansion costs.

Table 3-5
City of Salem
Determination of Wastewater System Improvement Allocation Percentages

	Total	Existing		Growth	
	Expansion	Amt.	%	Amt.	%
Allocation of Treatment Expansion Improvements					
PWWF - Firm	231.00	203.00	88%	28.00	12%
PWWF -Total	210.00	182.00	87%	28.00	13%
BOD (lbs)	-	-	0%	-	0%
TSS (lbs)	13.70	-	0%	14	100%
Allocation of Treatment Performance Improvements/New Processes & Technology					
PWWF - Firm	315.00	287.00	91%	28.00	9%
BOD	130	110	84%	20	16%
TSS	90	70	78%	20	22%

In addition to pure capacity expansion projects, there are a number of projects on the SDC Project List that enhance the level of performance provided at the treatment plant. For example, the Phase 2 headworks improvements include upgrading the screenings handling and the grit washer/compactor/handling facilities to address tightening requirements on grit disposal and provide odor control. Performance improvements are allocated in proportion to future requirements, which for PWWF, growth represents 9 percent.

The SDC Project List includes projects that will replace existing facilities designed based on BOD and TSS loadings. Growth is allocated a share of these costs based on the proportion of growth requirements to future build-out loadings (16 and 22 percent respectively). Some expansion of solids facilities are also planned, for which growth is allocated 100 percent, as the existing system has no current deficiencies.

As shown in **Table 3-4**, the total improvement fee cost basis is approximately $100 million, including estimated bond management and issuance costs for debt-funded facilities, and excluding developer funded facilities and CWIP. All CIP projects are generally assumed to be sized for build-out requirements.

Two important policies relative to the project list that serves as the basis for the improvement fee calculations warrant comment:

1. As set forth by Salem Revised Code (SRC) 66.110 and 120, the specific location, size and capacity of utility improvement projects will be determined with reference to any one or combination of the following: 1) the applicable Master Plan or, 2) specific engineering capacity studies approved by the Director of Public Works. With respect to facilities not shown in the Master Plan but necessary to link to adequate facilities, the location, size and capacity of such facilities to be constructed or linked to shall be

determined by the Development Review Committee**.** SRC 66.040 further defines the Development Review Committee as being composed of city management staff and appointed by the city manager from the departments of public works, community services, fire, or community development.

2. As set forth by the most recent Wastewater System Master Plan Amendment, the pipe sizes identified in the Master Plan for the individual projects reflect the required minimum pipe size at the minimum acceptable slope (per City of Salem Public Works Design Standards) to convey the projected design flows under Comprehensive Plan build out conditions. Pipe sizes will be evaluated and refined as necessary by each project's design engineer during the conceptual and detailed final design for each project. The ultimately selected pipe size may be different than that shown if prevailing site conditions (i.e., slopes) allow such a modification as ultimately determined by the design engineer to the satisfaction of the Public Works Director.

Develop SDC Schedule

System-wide unit costs of capacity are determined by dividing the reimbursement fee and improvement fee cost bases (**Tables 3-3 and 3-4**), by the aggregate growth-related capacity requirements defined in **Table 3-1**. These unit costs are then applied to the capacity requirements of a 3/4" meter equivalent (the smallest meter size currently installed by the City) to determine the SDC per unit. The rate is then scaled up or down for each development type, based on estimated capacity requirements for the installed meter size.

Meter Equivalent Capacity Requirements

Table 3-6 presents the calculation of the capacity requirements per meter equivalent for each design criteria. The analysis begins with the system-wide base flow of 23 mgd (per the Wastewater Treatment Plant Facilities Plan), which is then divided by the number of 3/4-inch meter equivalents currently connected to the system. The base flow per meter equivalent is estimated to be 341 gpd. Base flow per meter equivalent is then adjusted for dry weather infiltration and inflow (I/I), based on information from the Facilities Plan which indicates that dry weather I/I is approximately 40 percent of ADWF. The ADWF per meter is about 482 gpd. The PWWF per meter equivalent is determined by applying the peaking factor of 2.07 to the ADWF, yielding a result of 1,000 gpd. The capacity requirements per household are significantly lower than assumed in the previous SDC study, reflecting reduced water use and I/I contributions by new development.

Strength loadings are determined using the base flow per meter equivalent (341 gpd) and the BOD and TSS concentrations from the wastewater rate study (236 mg/l and 251 mg/l, respectively).

Table 3-6
Wastewater System SDC Analysis
Wastewater Capacity Requirements per Meter Equivalent

Component	Units	Value
Existing Base flow (1)	mgd	23
Existing Meter Equivalents		67,364
Base flow per meter equivalent	gpd	341.43
Average Dry Weather Flow (ADWF) mgd (1)		32.5
Infiltration & Inflow (1)	mgd	9.5
I/I Factor		0.413043
ADWF per meter equivalent	gpd	482.45
PWWF/ADWF Ratio (2)		2.07
PWWF per meter equivalent	gpd	1,000.64
BOD concentration (3)	mg/l	236.00
BOD	lbs	0.6724
TSS concentration (3)	mg/l	251.00
TSS	lbs	0.7152

Sources:
(1) Willow Lake Wastewater Treatment Facilities Plan (September 2002)
(2) From Table 3-1 (28 mgd/13.5 mgd)
(3) 2004 Cost of Service Rate Study

Reimbursement Fee

Table 3-7 shows the reimbursement fee calculation by system component and design criteria. The cost basis figures by component from **Table 3-3** are divided by growth capacity requirements from **Table 3-1** to determine the system-wide unit costs of capacity.

Table 3-7
City of Salem
Wastewater Reimbursement Fee Calculation

		System Component/Design Criteria					
		Treatment (1)					
Item	**Total**	PWWF	BOD	TSS	Pumping (2)	Interceptors (3)	Collection (2)
Reimbursement Fee Cost Basis	$34,297,196	$18,185,497	$0	$89,633	$6,868,840	$3,572,251	$5,580,975
Capacity Units		mgd	1,000 lbs/day	1,000 lbs/day	mgd	mgd	mgd
Growth Capacity Requirements		28.0	20.5	20.1	22.4	25.2	22.4
Unit Cost		$649,482	$0	$4,465	$306,280	$142,006	$248,854
Capacity Requirements per Unit		0.001001	0.000672	0.000715	0.001001	0.001001	0.001001
Reimbursement Fee Per Unit	$1,351	$650	$0	$3	$306	$142	$249

(1) Growth capacity reflects system-wide needs
(2) Growth capacity net of wholesale customers
(3) Growth capacity net of Keizer

Table 3-8
City of Salem
Wastewater Improvement Fee Calculation

		System Component/Design Criteria					
		Treatment (1)					
Item	**Total**	PWWF	BOD	TSS	Pumping (2)	Interceptors (3)	Collection (2)
Improvement Fee Cost Basis	$100,037,277	$25,768,765	$6,883,968	$8,203,994	$13,238,090	$11,826,360	$34,116,100
Capacity Units		mgd	1,000 lbs/day	1,000 lbs/day	mgd	mgd	mgd
Growth Capacity Requirements		28.0	20.5	20.1	22.4	25.2	22.4
Unit Cost		$920,313	$336,624	$408,667	$590,283	$470,129	$1,521,229
Capacity Requirements per Unit		0.001001	0.000672	0.000715	0.001001	0.001001	0.001001
Improvement Fee Per Unit	$4,023	$921	$226	$292	$591	$470	$1,522

(1) Growth capacity reflects system-wide needs
(2) Growth capacity net of wholesale customers
(3) Growth capacity net of Keizer

As indicated previously, wholesale customers are not served by certain types of facilities. Therefore, the aggregate growth requirements used for determining the unit costs of capacity are reflective of the following:

1. System-wide growth needs: used for sizing treatment facilities.
2. Future growth without wholesale customers (East Salem, Keizer and Turner): used for sizing collection and pumping facilities.
3. Future growth without Keizer: used for sizing interceptors.

The unit costs of capacity by component are then multiplied by the capacity requirements per meter equivalent to determine the reimbursement fee per unit. The total reimbursement fee per unit is $1,351, including $650 for treatment-related facilities designed for PWWF, $3 for BOD/TSS facilities, $306 for pumping facilities, $142 for interceptors, and $249 for collection facilities.

Improvement Fee

The improvement fee calculation is shown in **Table 3-8 (previous page)**. Growth improvement costs from **Table 3-4** are distributed across the aggregate growth capacity requirements (reflecting the levels of service provided by each component as discussed above for the reimbursement fee), and the unit costs of capacity are multiplied by the capacity requirements per meter equivalent to determine the improvement fee per unit. The resulting cost per unit is $4,023, including $921 for treatment-related PWWF facilities, $226 for BOD facilities, $292 for BOD/TSS facilities, $591 for pumping facilities, $470 for interceptors, and $1,522 for collection facilities.

Compliance Charge

As mentioned previously in Section 1, local governments are entitled to include in the SDCs, a charge to recover costs associated with complying with the SDC law. Compliance costs include those related to developing the SDC methodology and project list (i.e., a portion of facilities and master planning costs), and staff time related to administration of SDC credits, accounting and reporting. **Table 3-9** shows the calculation of the compliance charge per meter equivalent, which is estimated to be $91.

Table 3-9
City of Salem
Wastewater Compliance Charge

Component	Amortization (Years)	Total	Growth	Annualized
SDC Methodology	5	$28,000	100%	$28,000
Facility/Master Planning (1)	10	$1,339,122	27%	$35,776
SDC Fund Auditing/Accounting (2)	1	$44,690	100%	$44,690
Total Annual Costs		$1,411,812		$108,466
Estimated Annual Meter Equivalents				1,198
Compliance Charge per Meter Equivalent				**$91**

(1) Allocation based on growth's share of project list costs
(2) From FY2007/08 City Budget

Existing Deficiency Credit

A credit to the combined wastewater SDC is included to recognize the contribution by new development toward:

1. existing debt service associated with current "used" capacity, and
2. future SDC project list costs (both debt service and cash funding) associated with providing capacity to serve existing customers.

Once connected to the system, new customers will pay monthly user fees that are used to retire existing and future debt and fund capital improvements that will benefit existing customers. A credit is provided – equal to the present value of the future payments per meter equivalent – to recognize these future contributions.

Table B-6 in Appendix B provides a summary of the financing assumptions which form the basis of the credit. As indicated in Table B-6, the SDC project list (Table B-1) includes about $375 million of costs related to existing system deficiencies. In addition, existing debt service costs of about $43 million are associated with existing "used" capacity (the growth percentages by revenue bond issue for existing debt are shown in Table B-5). Annual deficiency costs are projected based on the estimated timing of debt funded projects (from the project list and shown in Table B-6) and existing debt service schedules. Cash funded projects are assumed to be distributed evenly over each year of the planning period.

Projected reimbursement SDC revenue is deducted from the annual deficiency costs to estimate the annual rate contribution to SDC project list costs and existing debt service. The annual rate contribution is divided by the total number of meter equivalents projected for each year. The credit is equal to the present value of the future stream of rate costs per meter equivalent.

As shown in **Table 3-10**, the credit for 2008 is $2,140 per meter equivalent.

Combined Fee

Table 3-10 presents the calculation of the total SDC per meter equivalent. The total SDC per meter equivalent is $3,323, including the reimbursement component of $1,351, the improvement component of $4,023, and the adjustments. The current SDC per EDU is $2,805.

Table 3-10
City of Salem
Combined Wastewater SDC per Meter Equivalent

Component	Amount
Reimbursement SDC per unit	$1,351
Improvement SDC per unit	$4,023
Combined SDC per unit	$5,373
Adjustments	
Debt Credit	($2,140)
Compliance Charge	$91
Total SDC per Meter Equivalent	**$3,323**
Current SDC per EDU	*$2,805*

Standard hydraulic equivalency tables are used to calculate the SDC for developments with larger meters. Revised wastewater SDCs by meter size are show in **Table 3-11**.

Policy Issues

The City may select among different methodology options in developing SDCs. The following options (which are basically local policy issues) associated with SDCs, were considered in addition to the methodology and calculations described above:

1. Existing system valuation based on original cost: (as opposed to the previously used depreciated original costs) **(Increases SDCs by approximately $300 per meter equivalent)**. The reimbursement fee is primarily associated with CWIP, so it is not significantly impacted by a change in valuation approach. Alternatively, the reimbursement fee could be based on replacement cost, which could potentially increase the SDCs by about $1,000 (doubling the reimbursement fee). The City elected to retain the existing book value based on depreciated original cost.

2. Exclusion of historical interest costs: **(Decreases SDCs by approximately $100 per meter equivalent).** Historical interest costs are only about 6 percent of the adjusted asset value for purposes of developing the reimbursement SDC. The City elected to include the historical interest cost as part of the reimbursement SDC.

3. Exclusion of Bond/CIP Management Costs: **(Decreases SDCs by about $125 per meter equivalent).** Historical and prospective Bond/CIP Management costs are only about 5 percent of the cost bases. The City elected to include these costs (2% for Bond/CIP Management and 3% for Bond Issuance) as part of the improvement SDC.

4. Residential SDC Assessment Basis: (**no change in SDC**). The revised SDC schedule presented in **Table 3-11** is based on water meter size for all developments. The City's current assessment basis for multifamily and single family development is on a dwelling unit basis. Use of meter size for all developments is the most common assessment basis, and enhances administration of SDCs for mixed use developments (because residential and commercial are assessed on the same basis). The City elected to base the SDC schedule for both water and wastewater on water meter size for all developments.

Table 3-11
City of Salem
Revised Wastewater SDC Schedule

Meter Size	Ratio	SDCi	SDCr	Compliance	Credit	Total
Compound						
5/8"	1.0	$4,023	$1,351	$91	($2,140)	$3,323
3/4"	1.0	$4,023	$1,351	$91	($2,140)	$3,323
1"	1.7	$6,839	$2,296	$154	($3,639)	$5,650
1.5"	3.3	$13,275	$4,457	$299	($7,063)	$10,968
2"	5.3	$21,321	$7,158	$480	($11,344)	$17,614
3"	10.7	$43,044	$14,451	$969	($22,902)	$35,561
4"	16.7	$67,181	$22,555	$1,512	($35,745)	$55,502
6"	33.3	$133,959	$44,974	$3,014	($71,276)	$110,672
Turbine						
4"	21.0	$84,479	$28,362	$1,901	($44,949)	$69,793
6"	46.7	$187,865	$63,072	$4,227	($99,957)	$155,207
8"	80.0	$321,824	$108,046	$7,242	($171,233)	$265,879
10"	126.7	$509,689	$171,118	$11,469	($271,190)	$421,086
E. Salem and Turner						
Compound						
5/8"	1.0	$1,910	$795	$91	($2,043)	$752
3/4"	1.0	$1,910	$795	$91	($2,043)	$752
1"	1.7	$3,247	$1,352	$154	($3,474)	$1,279
1.5"	3.3	$6,303	$2,624	$299	($6,743)	$2,482
2"	5.3	$10,123	$4,214	$480	($10,830)	$3,986
3"	10.7	$20,436	$8,507	$969	($21,864)	$8,048
4"	16.7	$31,896	$13,278	$1,512	($34,125)	$12,561
6"	33.3	$63,601	$26,476	$3,014	($68,045)	$25,046
Turbine						
4"	21.0	$40,109	$16,697	$1,901	($42,911)	$15,795
6"	46.7	$89,194	$37,130	$4,227	($95,427)	$35,125
8"	80.0	$152,795	$63,607	$7,242	($163,472)	$60,172
10"	126.7	$241,989	$100,737	$11,469	($258,899)	$95,297
Keizer						
Compound						
5/8"	1.0	$1,440	$653	$91	($1,987)	$196
3/4"	1.0	$1,440	$653	$91	($1,987)	$196
1"	1.7	$2,447	$1,110	$154	($3,378)	$333
1.5"	3.3	$4,750	$2,155	$299	($6,558)	$646
2"	5.3	$7,629	$3,461	$480	($10,532)	$1,038
3"	10.7	$15,403	$6,987	$969	($21,263)	$2,095
4"	16.7	$24,040	$10,905	$1,512	($33,187)	$3,270
6"	33.3	$47,936	$21,744	$3,014	($66,175)	$6,520
Turbine						
4"	21.0	$30,230	$13,713	$1,901	($41,732)	$4,112
6"	46.7	$67,225	$30,494	$4,227	($92,804)	$9,143
8"	80.0	$115,161	$52,239	$7,242	($158,978)	$15,663
10"	126.7	$182,386	$82,733	$11,469	($251,782)	$24,807

APPENDIX A

Water SDC Documentation

Table A-1
Water System SDC Project List
City of Salem

Plan Year	Project Title	Est. Cost	% Growth	Growth $	Dev Funded
	Storage				
2025	Future Orchard Hts W-2	$6,560,000	100	$6,560,000	
2025	Future Chatnicka Res W-3	$4,290,000	100	$4,290,000	
2055	Future Mnt View #2 G-0	$12,500,000	100	$12,500,000	
2025	Future Eola #2b Res W-3	$1,370,000	100	$1,370,000	
2025	Propose College Res S-1	$6,480,000	78	$5,054,400	
2010	Future Skyline #2 Res S-3	$6,480,000	65	$4,212,000	
2010	Future Coburn Res S-1	$9,580,000	100	$9,580,000	
2010	Future Croisan L. Res S-1	$4,290,000	95	$4,075,500	
2025	Propose 2nd Grice Hill Reservoir	$4,290,000	100	$4,290,000	
2035	Replace Candalaria & Madar Reservoirs	$6,480,000	15	$996,000	
2055	Propose College Res S-2	$4,260,000	100	$4,260,000	
2055	Propose S-4 Reservoir	$4,290,000	100	$4,290,000	
		$70,870,000	86.75%	$61,477,900	$0
	Treatment & Source				
2025	Geren Island Filer #2	$16,400,000	100.00%	$16,400,000	
2055	Geren Island Filer #5	$16,400,000	100.00%	$16,400,000	
2035	Willamette River Intake	$0	0.00%	$0	
2010	T Plant Valves, Gates, PS, Wells Automation	$1,500,000	32.46%	$486,923	
		$34,300,000	97.05%	$33,286,923	$0
	Transmission -- Upper				
2014	Lewis SE	$49,000	100.00%	$49,000	
2010	Franzen Res SE	$2,805,000	78.77%	$2,209,510	
2010	Val View SE	$19,000	100.00%	$19,000	
2008	Tabernacle SE	$2,611,000	79.00%	$2,062,690	
2015	75 MGD PIPELINE: NOAA Mitigation	$1,500,000	79.00%	$1,185,000	
2010	2nd SE	$1,828,000	79.00%	$1,444,120	
2010	7100 3rd SE	$49,000	85.63%	$41,960	
2025	Geren Island SE	$34,000	100.00%	$34,000	
2055	Geren Island SE	$28,000	100.00%	$28,000	
2008/2014	S of Mill Creek SE	$26,664,000	79.00%	$21,064,560	
2011/2014	Upper Transmission Main L3	$40,004,000	79.00%	$31,603,160	
		$75,591,000	79.03%	$59,741,000	$0
	Pumping				
2025	Future Orchard Hts. W-3 PS	$550,000	93.00%	$511,500	
2025	Future Orchard Hts W-2	$1,110,000	100.00%	$1,110,000	
2055	Propose Increase Mnt View PS Q	$4,790,000	40.00%	$1,916,000	
2010	Future Croisan S-2 PS	$1,660,000	94.00%	$1,560,400	
2010	Propose Fairview S-1 PS	$1,110,000	100.00%	$1,110,000	
2010	Propose Ewald Pump Station S3	$370,000	47.00%	$173,900	
2055	Propose Upper Chatnicka PS	$990,000	100.00%	$990,000	
2025	Propose Crioisan S4 Pump Sta	$550,000	100.00%	$550,000	
2010	Propose Davis Rd Pump Station	$550,000	98.00%	$539,000	
2010	Increase Boone S2 PS Capacity	$6,810,000	75.00%	$5,107,500	
2010	Inc. Croisan S3 PS Capacity	$1,110,000	75.00%	$832,500	
2055	Propose Upper College PS S-2	$550,000	100.00%	$550,000	

Plan Year	Project Title	Est. Cost	% Growth	Growth $	Dev Funded
2025	Propose Increase Deer Park PS Q	$90,000	44.00%	$39,600	
2055	Propose S-4 Closed End PS	$740,000	100.00%	$740,000	
2025	Propose Lone Oak S-3 PS	$1,110,000	100.00%	$1,110,000	
2025	Propose 2nd S River Rd S1 PS	$920,000	44.00%	$404,800	
2010	ASR Well Field Phase III	$8,583,000	51.00%	$4,377,330	
2015	Fairmont S-2 Pump Station Improvements	$842,000	50.00%	$421,000	
2010	Propose 2nd Keizer Intertie Pump Sta	$1,600,000	100.00%	$1,600,000	
2010	Pictsweet Wells	$1,250,000	100.00%	$1,250,000	
2008	Edwards Pump Station Improvements	$525,000	40.00%	$210,000	
		$35,810,000	70.10%	$25,103,530	$0
	Transmission -- Lower				
2010	7100 3rd SE	$141,000	100.00%	$141,000	
2055	Turner Rd SE	$0	0.00%	$0	
2008	Connection to Deer Park Rd PS	$3,000	56.00%	$1,680	
		$144,000	99.08%	$142,680	$0
	Distribution				
	Total	$80,823,160	20.99%	$16,963,770	$34,172,000
	Total	**$297,538,160**	66.11%	**$196,715,804**	**$34,172,000**

Two important policies relative to the above project list that serves as the basis for the improvement fee calculations warrant comment:

1. As set forth by Salem Revised Code (SRC) 66.110 and 120, the specific location, size and capacity of utility improvement projects will be determined with reference to any one or combination of the following: 1) the applicable Master Plan or, 2) specific engineering capacity studies approved by the Director of Public Works. With respect to facilities not shown in the Master Plan but necessary to link to adequate facilities, the location, size and capacity of such facilities to be constructed or linked to shall be determined by the Development Review Committee**.** SRC 66.040 further defines the Development Review Committee as being composed of city management staff and appointed by the city manager from the departments of public works, community services, fire, or community development.

2. As set forth by the most recent Water System Master Plan Amendment, the pipe sizes identified in the Master Plan for the individual projects reflect the required minimum pipe size at the minimum acceptable slope (per City of Salem Public Works Design Standards) to convey the projected design flows under Comprehensive Plan build out conditions. Pipe sizes will be evaluated and refined as necessary by each project's design engineer during the conceptual and detailed final design for each project. The ultimately selected pipe size may be different than that shown if prevailing site conditions and projected water demands allow such a modification as ultimately determined by the design engineer to the satisfaction of the Public Works Director.

Table A-2

CITY OF SALEM - PUBLIC WORKS DEPT. - UTILITY PLANNING SECTION

2055 WATER SYSTEM RESERVOIR STORAGE VOLUMES

Pressure Zone	Buildout MDD (Model #'s)	Buildout Reservoir Storage Volume	Req'd Emergency Storage Volume (50% MDD)	Allocated Emergency Storage Volume	Absolute Minimum Res Elev Except During Emergencies	Req'd Fire Storage Volume	Allocated Fire Storage Volume	Allocated Emergency + Fire Storage Volume	Lowest Res Elev During Normal Operations	Req'd Equalization Storage Volume (18% MDD)	Allocated Equalization Storage Volume	System Total Req'd Storage Volume
	(MGD)	(MG)	(MG)	(MG)	(FT)	(MG)	(MG)	(MG)	(FT)	(MG)	(MG)	(MG)
G-0	63.16	30.807	31.581	31.581	334	1.32	1.320	32.901	334	11.369	11.369	44.271
S-1	7.50	6.863	3.750	3.750	434	1.32	1.320	5.070	438	1.350	1.350	6.421
S-2	14.60	10.791	7.302	7.302	589	0.24	0.240	7.542	590	2.629	2.629	10.171
ASR, S-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S-3	7.13	5.849	3.565	3.639	721	0.24	0.240	3.879	722	1.283	1.310	5.088
S-4	0.32	1.129	0.159	0.159	842	0.24	0.240	0.399	847	0.057	0.057	0.457
T	0.15	NA	0.075	in S3	NA	0.00	in S3		NA	0.027	in S3	0.102
T+	2.64	2.303	1.322	1.322	435	0.24	0.240	1.562	437	0.476	0.476	2.038
W-1	1.04	1.129	0.522	0.522	588	0.24	0.240	0.762	592	0.188	0.188	0.950
W-2	7.83	5.786	3.914	3.914	496	0.24	0.240	4.154	497	1.409	1.409	5.563
W-3 Eola	2.82	2.685	1.408	1.408	643	0.24	0.240	1.648	645	0.507	0.507	2.155
W-3 Chatnicka	0.15	0.565	0.076	0.076	765	0.24	0.240	0.316	772	0.027	0.027	0.344
W-4	0.72	1.129	0.362	0.416	767	0.24	0.480	0.896	775	0.130	0.150	0.733
City of Turner	0.11	NA	0.054	Chatnicka W-3	NA	0.24	Chatnicka W-3		NA	0.019	Chatnicka W-3	0.313
Croisan S-1	2.42	NA	1.211	in Franzen	NA	0.24	in Franzen	in Franzen	NA	0.436	in Franzen	in Franzen
Croisan S-2	0.00	in S-1	0.000	in S-1	NA	0.00	in S-1		NA	0.000	in S-1	0.000
Croisan S-3	0.88	0.849	0.440	0.771	597	0.24	0.240	1.011	599	0.158	0.278	0.838
Crosian S-4	0.60	NA	0.302	Croisan S-2	NA	0.00	Croisan S-2	Croisan S-2	NA	0.109	Croisan S-2	0.411
ESWD G-0	0.06	NA	0.029	Croisan S-2	NA	0.00	Croisan S-2		NA	0.010	Croisan S-2	0.039
SYSTEM WIDE	112.15	69.883	56.074	54.863		5.520	5.280	60.143		20.186	19.751	79.89
Source Contamination Req'd Em. Storage (1.5*ADD)=			70.583									
	FRANZEN	92.195		71.794	409		0.240	72.034	409		0.436	72.470
	SYSTEM	162.078	126.66	126.66		5.52	5.52	132.177		20.19	20.19	152.36

NOTES:

1. Reservoir Storage Volumes do not take into account storage available from the ASR system in the S-2 pressure zone or other emergency sources.
2. Reservoir Elevations are rounded to the next lowest one foot.

Table A-3

CITY OF SALEM - PUBLIC WORKS DEPT. - UTILITY PLANNING SECTION

WATER SYSTEM RESERVOIR EXISTING CAPACITY ANALYSIS

Pressure Zone	2003 MDD (Model #'s)	Existing Reservoir Storage Volume	Req's Emergency Storage Volume (50% MDD)	Allocated Emergency Storage Volume	Req'd Fire Storage Volume	Allocated Fire Storage Volume	Allocated Emergency + Fire Storage Volume	Req'd Equalization Storage Volume (18% MDD)	Allocated Equalization Storage	System Total Req'd Storage Volume	Storage Excess (+) or Deficiency (-) in Pzone	% Available Capacity for Growth	Weighted % Available Capacity for Growth
	(MGD)	(MG)	(MG)	(MG)	(MG)	(MG)	(MG)	(MG)	(MG)	(MG)	(MG)		
G-0	38.71	20.715	19.355	8.500	1.32	2.099	10.598	6.968	6.999	27.643	-6.928	-33.4%	-5.1%
S-1	3.43	2.006	1.714	0.685	1.32	0.660	1.345	0.617	0.617	3.650	-1.644	-82.0%	-1.2%
S-2	10.24	10.791	5.118	7.060	0.24	0.277	7.337	1.843	1.843	7.201	3.589	33.3%	2.6%
ASR, S-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S-3	5.12	3.546	2.562	0.647	0.24	0.084	0.731	0.922	0.932	3.725	-0.214	-6.0%	-0.2%
S-4	0.05	in S-3	0.026	0	in S-3	0	in S-3	0.009	0	0.035	0.000	0.0%	0.0%
T	0.81	0.500	0.404	0.233	0.24	0.048	0.281	0.145	0.167	0.789	-0.612	-122.3%	-0.4%
T+	0.12	in T	0.061	in T	0.24	in T	in T	0.022	in T	0.323	0.000	0.0%	0.0%
W-1	5.32	4.658	2.660	2.020	0.24	0.431	2.451	0.957	0.957	3.857	0.800	17.2%	0.6%
W-2	0.59	0.957	0.295	0.122	0.24	0.445	0.567	0.106	0.125	0.641	0.034	3.5%	0.0%
W-3 Eola	0.09	0.205	0.045	0.022	0.24	0.084	0.106	0.016	0.008	0.301	-0.095	-46.5%	-0.1%
W-3 Chatnicka	0.06	in W2	0.031	0.000	0.24	0.000	in W-2	0.011	0.000	0.282	0.000	0.0%	0.0%
W-4	0.00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
City of Turner	0.69	Franzen	0.343	Franzen	0.24	Franzen	Franzen	0.123	Franzen	0.706	0.000	0.0%	0.0%
Croisan S-1	0.00	in S-1	0.000	in S-1	0.00	in S-1	in S-1	0.000	in S-1	0.000	0.000	0.0%	0.0%
Croisan S-2	0.15	0.849	0.073	0.160	0.24	0.240	0.400	0.026	0.026	0.340	0.509	60.0%	0.4%
Croisan S-3	0.17	C. S-2	0.086	0.000	0.00	0.000	Croisan S-2	0.031	0.000	0.118	0.000	0.0%	0.0%
ESWD G-0	in G-0	in G-0	in G-0	in G-0	in G-0	in G-0	in G-0	in G-0	in G-0	0.000	0.000	0.0%	0.0%
SYSTEM WIDE	65.55	44.227	32.774	19.449	5.040	4.368	23.817	11.799	11.675	49.612	-5.385	-176.3%	-3.3%
Source Contamination Req'd Em. Storage (1.5*ADD)=				41.392									
	FRANZEN RES.	92.195		54.716		0.24	54.716		0.123	55.080	37.115	40.3%	27.2%
	SYSTEM TOTAL	136.422	74.17	74.17	5.04	4.61	78.533	11.80	11.80	104.69	31.730		
												Percent Existing Water Res Available Capacity	**23.9%**

NOTES:

1. Reservoir Storage Volumes do not take into account storage available from the ASR system in the S-2 pressure zone or other emergency sources.
2. Reservoir Elevations are rounded to the next lowest one foot.

Table A-4

CITY OF SALEM - PUBLIC WORKS DEPT. - UTILITY PLANNING SECTION

WATER SYSTEM PUMP STATION EXISTING CAPACITY ANALYSIS

Pressure Zone	2003 MDD (Model #'s)	Existing Pump Station Total Capacity	Existing Pump Station Firm Capacity	Pumping Req'd Factor of Safety	Existing Firm Pump Q Req'd to next above pzones	Existing Req'd Pumping Capacity =FS*(MDD pzone + Firm pump Q to above pzones)	Existing Deficiency (-) or Excess (+) Pumping Capacity	% Available Capacity for Growth	Weighted % Available Capacity for Growth	Buildout MDD (Model #'s)	Buildout Pump Station Total Capacity	Buildout Pump Station Firm Capacity	Pumping Req'd Factor of Safety	Buildout Firm Pump Q Req'd to next above pzones	Buildout Req'd Pumping Capacity =FS*(MDD pzone + Firm pump Q to above pzones)	Buildout Deficiency (-) or Excess (+) Pumping Capacity
	(MGD)	(MGD)	(MGD)		(MGD)	(MGD)	(MGD)			(MGD)	(MGD)	(MGD)		(MGD)	(MGD)	(MGD)
G-0	38.71	5.04	5.04	N/A	33.00	N/A	N/A	N/A		63.16	55.04	55.04	N/A	70.42	N/A	N/A
S-1	3.43	10.66	6.62	10%	0.31	4.11	2.51	37.9%	4.3%	7.50	20.02	13.97	10%	5.18	13.95	0.01
S-2	10.24	25.56	10.51	10%	11.10	23.47	-12.95	-123.2%	-22.0%	14.60	45.36	33.12	10%	14.47	31.98	1.14
ASR, S-2	in S2	5.04	5.04	N/A	N/A	N/A	5.04	in S-2		in S2	9.00	4.03	N/A	N/A	N/A	4.03
S-3	5.12	17.72	11.10	10%	0.07	5.72	5.38	48.5%	9.2%	7.13	21.96	14.47	10%	5.76	14.18	0.29
S-4	0.05	0.26	0.07	10%	0.00	0.06	0.01	20.8%	0.0%	0.53	5.18	3.46	10%	0.00	0.58	2.88
T	0.81	4.32	2.88	10%	0.00	1.02	1.86	64.5%	3.2%	2.64	7.78	5.18	10%	1.73	4.81	0.37
T+	0.12	0.00	N/A	10%	N/A	N/A	N/A	N/A		1.04	2.59	1.73	10%	0.00	1.15	0.58
W-1	5.32	17.60	11.98	10%	3.46	9.65	2.33	19.4%	4.0%	7.83	26.78	18.14	10%	6.91	16.21	1.93
W-2	0.59	5.18	3.46	10%	0.76	1.49	1.97	56.9%	3.3%	2.82	10.37	6.91	10%	4.10	7.61	-0.70
W-3 Eola	0.09	1.30	0.65	10%	0.00	0.10	0.55	84.8%	0.9%	0.15	1.30	0.65	10%	0.00	0.17	0.48
W-3 Chatnicka	0.06	0.55	0.12	10%	0.00	0.07	0.05	41.1%	0.1%	0.72	5.18	3.46	10%	1.94	2.94	0.52
W-4	0.00	0.00	N/A	10%	N/A	N/A	N/A	N/A		0.11	3.67	1.94	10%	0.00	0.12	1.83
City of Turner	0.69	N/A	N/A	N/A	N/A	N/A	N/A	N/A		2.42	N/A	N/A	N/A	N/A	N/A	N/A
Croisan S-1	0.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A		0.00	N/A	N/A	N/A	N/A	N/A	N/A
Croisan S-2	0.15	0.69	0.31	10%	1.00	1.26	-0.95	-306.7%	-1.6%	0.88	6.91	5.18	10%	4.03	5.40	-0.22
Croisan S-3	0.17	3.59	1.00	10%	0.00	0.19	0.81	81.0%	1.4%	0.60	5.76	4.03	10%	2.30	3.20	0.83
Croisan S-4								N/A		0.06	4.03	2.30	10%	0.00	0.07	2.24
Champion Hill S-4								N/A			4.03	2.30	10%	0.00	0.00	2.30
ESWD G-0	in G-0	N/A	N/A	N/A	N/A	N/A	N/A	N/A		in G-0	N/A	N/A	N/A		N/A	N/A
SYSTEM WIDE TOTALS	65.55	97.50	58.77		49.70	47.13	6.60		2.7%	112.21	234.97	175.93		116.86	102.37	

Table A-5

City of Salem

Water System Construction Work in Progress 2006

Cost Center	Project No.	Project Name	Total	Admin	Transmission & Distribution	Upper Trans	Source & Treatment	Pumping	Storage Reservoirs	Total
58902010	700006	Seismic Vnblty Rft-Yr	**1,980,960**		1,980,960					1,980,960
	701007	Large Wtr Valve Add/Re	**357,929**		357,929					357,929
	701012	Non Assed Water CIP Mg	**782,790**		N/A					0
	703016	Geren Is Trtmnt Fac-Br	**172,994**				172,994			172,994
	703018	Boone Pump Station Em	**537,000**					537,000		537,000
	704026	Hazel Ave Pkg-Wtr Main	**472,000**		472,000					472,000
	704031	Alderbrook Pkg-Wtr Mai	**687,872**		687,872					687,872
	704039	Hwthrn/State/Mill Cr W	**411,816**		411,816					411,816
	704060	DPSST Wtr Line/Deer Pr	**687,767**		687,767					687,767
	705004	Luradel Ave Pkg-Wtr Ma	**434,006**		434,006					434,006
	705005	Madrona Ave Pkg-Wtr Ma	**502,001**		502,001					502,001
	705006	Wtr Sys R&R-Schem Dsgn	**60,999**		60,999					60,999
	705009	Skyline Wtr Pmp Sta-Em	**315,000**					315,000		315,000
	705011	Holiday Dr Pkg-Wtr Mai	**275,998**		275,998					275,998
	705014	Market St-Wtr Main Rep	**346,005**		346,005					346,005
	705015	Champion Hill Reservoi	**3,045,983**						3,045,983	3,045,983
	706006	Center Water Line Repl	**135,800**		135,800					135,800
	998538	Water Unspecified	**1,705,891**		1,705,891					1,705,891
	998540	Roadway Restore for Ut	**747,282**		747,282					747,282
	704032	Gardener Ave Pkg-Wtr M	**343,600**		343,600					343,600
	706011	Wtr Main Rplc-Center S	**72,000**		72,000					72,000
58902020	702046	Debt Service on USA Pr	**3,870,602**		N/A					0
	704052	Battle Crk/Landau-Main	**286,996**		286,996					286,996
	706004	Uppr Trans-Delaney Rd	**6,376,000**			6,376,000				6,376,000
	706017	Champion Hill Res-Dev	**1,567,000**						1,567,000	1,567,000
	706019	Water Line Crkside/Mil	**250,000**		250,000					250,000
	799059	Wtr Imprv-Dvl Pass-thr	**2,079,190**		N/A					0
	799060	Wtr Imprv-Dvlpr Reimb.	**897,750**		N/A					0
	980247	SDC Admin-Water	**351,065**		N/A					0
	998705	Transfer Interest to F	**1,236,204**		N/A					0

Cost Center	Project No.	Project Name	Total	Admin	Transmission & Distribution	Upper Trans	Source & Treatment	Pumping	Storage Reservoirs	Total
58904050	701070	Water Mgmt Plan	**1,397,219**	1,397,219						1,397,219
	799038	75 MGH Upper Trans-ROW	**2,425,991**			2,425,991				2,425,991
	799046	Geren Isl Off-Site Tra	**6,439,703**			6,439,703				6,439,703
	799048	Bond H CIP Management	**1,412,872**	1,412,872						1,412,872
58904055	702009	Franzen Reservoir Reha	**15,444,001**						15,444,001	15,444,001
	702015	Bennett Dam-Fish Ladde	**1,236,005**				1,236,005			1,236,005
	702017	Mill Race Fish Screen	**733,394**				733,394			733,394
58904055	998800	Bond I Wtr-CIP Mgmt	**554,521**	554,521						554,521
58904510	704076	Geren Island Corr Cont	**697,004**				697,004			697,004
	704077	Chakarun Reserv	**287,000**						287,000	287,000
	704079	Uppr Trans Main-Delane	**4,694,108**			4,694,108				4,694,108
	704081	Mill Cr Prk Offst Wtr	**1,645,004**		1,645,004					1,645,004
	705007	Uppr Trans-Ph 3,4,5-Fn	**843,001**			843,001				843,001
	705008	Uppr Trans-Delaney Rd	**563,995**			563,995				563,995
	706005	Upper Trans-Delaney Rd	**11,326,276**			11,326,276				11,326,276
	998642	CIP Management-Wtr	**946,998**	946,998						946,998
		Total	**81,637,595**	**4,311,610**	**11,403,928**	**32,669,074**	**2,839,398**	**852,000**	**20,343,984**	**72,419,994**

Table A-6

City of Salem

Existing Debt Service Summary

Bond Issue	Total	Source & Treatment	Upper Transmission	Lower Transmission	Pump	Franzen	Distribution Storage	Distribution	Water Total	Water Growth
Available Capacity		32%	52%	0%	3%	27%	0%	20%		
		0%	0%	0%	81%	0%	2%	17%	100%	5.6%
A		*0.02%*	*0.00%*	*0.00%*	*17.33%*	*0.00%*	*0.39%*	*3.60%*	21%	
Interest	$2,588,335	$458	$0	$0	$448,590	$0	$9,971	$93,271	$552,290	
Management	92,782	$16	$0	$0	$16,080	$0	$357	$3,343	$19,797	
		19%	0%	0%	81%	0%	0%	0%	100%	8.4%
B		*5.68%*	*0.00%*	*0.00%*	*23.59%*	*0.00%*	*0.00%*	*0.00%*	29%	
Interest	$4,021,430	$228,575	$0	$0	$948,620	$0	$0	$0	$1,177,195	
Management	201,570	$11,457	$0	$0	$47,549	$0	$0	$0	$59,006	
		84%	9%	0%	0%	0%	0%	7%	100%	33.4%
CD		*40.98%*	*4.43%*	*0.00%*	*0.00%*	*0.00%*	*0.01%*	*3.42%*	49%	
Interest	$7,873,276	$3,226,802	$349,102	$0	$0	$0	$1,052	$269,075	$3,846,032	
Management	753,303	$308,735	$33,402	$0	$0	$0	$101	$25,745	$367,982	
		100%	0%	0%	0%	0%	0%	0%	100%	32.5%
E		*54.70%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	55%	
Interest	$6,352,180	$3,474,423	$0	$0	$0	$0	$0	$0	$3,474,423	
Management	585,352	$320,167	$0	$0	$0	$0	$0	$0	$320,167	
F		*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	0%	
Interest	$4,808,830	$0	$0	$0	$0	$0	$0	$0	$0	
Management	494,642	$0	$0	$0	$0	$0	$0	$0	$0	
		76%	8%	0%	0%	6%	0%	9%	100%	32.5%
G		*46.42%*	*5.03%*	*0.00%*	*0.00%*	*3.80%*	*0.27%*	*5.62%*	61%	
Interest	$2,872,091	$1,333,169	$144,470	$0	$0	$109,127	$7,613	$161,310	$1,755,690	
Management	345,076	$160,178	$17,358	$0	$0	$13,111	$915	$19,381	$210,943	
		44%	22%	0%	0%	4%	19%	11%	100%	28.9%
H		*43.56%*	*22.08%*	*0.00%*	*0.00%*	*3.72%*	*19.47%*	*11.17%*	100%	
Interest	$8,762,430	$3,816,821	$1,934,888	$0	$0	$326,058	$1,705,770	$978,894	$8,762,430	
Management	1,417,515	$617,454	$313,010	$0	$0	$52,747	$275,946	$158,357	$1,417,515	
		7%	8%	0%	0%	85%	0%	0%	100%	29.6%
I		5.84%	7.05%	0.00%	0.00%	72.58%	0.00%	0.00%	85%	
Interest	$4,211,955	$245,830	$297,010	$0	$0	$3,057,102	$0	$0	$3,599,942	
Management	408,915	$23,866	$28,835	$0	$0	$296,797	$0	$0	$349,498	
Total										
Interest	**$41,490,527**	**$12,326,078**	**$2,725,470**	**$0**	**$1,397,210**	**$3,492,287**	**$1,724,406**	**$1,502,550**	**$23,168,001**	
Management	**$4,299,154**	**$1,441,875**	**$392,605**	**$0**	**$63,629**	**$362,655**	**$277,318**	**$206,827**	**$2,744,909**	

Table A-7
City of Salem
Summary of Financing Assumptions for Credit Analysis

	Total	2008	2010	2015	2025	2035	2055
Years Inflation (1)		*1*	*3*	*8*	*18*	*28*	*48*
Total Project List Costs (2007$)							
Future Debt Funded (2)	$180,905,000	$29,278,000	$66,696,000	$1,549,000	$39,424,000	$6,480,000	$37,478,000
Cash Funded (3)	$116,633,160						
Total Project List 2007 $	**$297,538,160**						
Future Debt Assumptions							
Total Amount (w/Issuance & Inflation)	$310,057,435	$30,938,093	$74,045,667	$1,945,676	$63,389,676	$13,337,410	$126,400,913
Interest Rate	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%
Term	20	20	20	20	20	20	20
Issuance Cost	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Existing Debt Principal Allocation (4)							
Future Growth	$9,876,385						
Existing	$34,558,615						
Total	$44,435,000						
Growth Cost Summary							
Future Debt Funded 2007 $	$154,648,503	$23,128,930	$53,813,173	$1,234,000	$37,998,400	$996,000	$37,478,000
Growth %	89%	79%	81%	80%	96%	15%	100%
Growth Principal -- Future Debt	$275,281,953	24,440,364	59,743,198	1,550,009	61,097,460	2,050,009	126,400,913
Cash Funded 2007 $ (5)	$76,239,300						
Total Growth Cost 2007$	$230,887,804						
Deficiency Summary							
Future Debt Funded 2007 $	$26,256,497	$6,149,070	$12,882,827	$315,000	$1,425,600	$5,484,000	$0
Deficiency %	11%	21%	19%	20%	4%	85%	0%
Deficiency Principal -- Future Debt	$34,775,482	$6,497,729	$14,302,470	$395,667	$2,292,216	$11,287,401	$0
Cash Funded 2007 $	$40,393,860						
Total Deficiency Cost 2007$	$66,650,356						
Total Allocated Cost 2007$	**$297,538,160**						

(1) Inflation Factor: 2.5%
(2) Includes all projects except distribution and pumping
(3) Distribution and pumping
(4) Based on Table A-5
(5) Includes developer funded improvements

APPENDIX B

Wastewater SDC Documentation

Table B-1

City of Salem

Wastewater SDC Project List

Plan Year	Project Title	Est. Cost	% Growth	Growth $	Dev Funded
	Treatment				
2006	Headworks, Phase 1	$104,416,000	12.00%	$12,529,920	
2012	Headworks, Phase 2	$9,599,200	9.00%	$863,928	
2011	Biosolids -- Digester Upgrades	$22,464,000	19.00%	$4,268,160	
2012	Biosolids -- Solids Thickening & Dewatering	$16,224,000	19.00%	$3,082,560	
2011	Disinfection and W3 Improvements	$13,624,000	13.00%	$1,771,120	
2012	Gravity Thickeners	$3,224,000	9.00%	$290,160	
2014	Primary Clarifiers Reconstruct - Two	$16,952,000	9.00%	$1,525,680	
2012	Wet Weather Primary Clarifiers - Two	$15,314,832	13.00%	$1,990,928	
	Primary Clarifiers Reconstruct - Two		0.00%	$0	
2007	River Rd Wet Weather Treatment Facility - Phase 1	$10,192,000	13.00%	$1,324,960	
2015	River Rd Wet Weather Treatment Facility - Phase 2	$33,280,000	13.00%	$4,326,400	
2025	River Rd Wet Weather Treatment Facility - Phase 3	$20,176,000	13.00%	$2,622,880	
2015	Secondary Clarifiers Reconstruct - Four (Includes the Aeration Basin Expansion)	$60,944,000	9.00%	$5,484,960	
2012	Wet Weather Secondary Clarifiers - Four	$17,576,000	9.00%	$1,581,840	
2012	Trickling Filter Pump Station and Trickling Filters	$40,976,000	16.00%	$6,556,160	
2010	South Primary Effluent Pump Station Rehabilitation	$6,240,000	9.00%	$561,600	
2015	Odor Control	$6,136,000	9.00%	$552,240	
	Subtotal	$397,338,032	12.42%	$49,333,496	
	Pumping				
2015	Const. PS, 3-180 gpm pumps	$240,000	100.00%	$0	$240,000
2025	Increase PS Capacity, 4-3,300 gpm VFD	$5,990,000	60.00%	$3,594,000	
2015	Increase PS Capacity, 4-2,700 gpm pumps	$4,900,000	61.00%	$2,989,000	
2015	Increase PS Capacity, 2-300 gpm pumps	$200,000	31.00%	$62,000	
2015	Increase PS Capacity to 35 mgd from 20 mgd	$9,240,000	42.00%	$3,880,800	
2025	Const. PS for Industrial Development	$660,000	100.00%	$660,000	
2015	Const. PS, 3-525 gpm pumps	$710,000	100.00%	$710,000	
2055	Const. PS,	$360,000	100.00%	$0	$360,000
2025	Const. PS, 2- 1000 gpm pumps	$670,000	100.00%	$670,000	
2025	Recnst PS,Aprx 10 ft too shallow to serve Eside Ck	$280,000	0.00%	$0	$280,000
	Subtotal	$23,250,000	54.05%	$12,565,800	$880,000
	Interceptors				
2015	WWTF	$16,490,000	48.00%	$7,915,200	$0
2025	Other	$4,610,000	72.62%	$3,348,800	
	Subtotal	$21,100,000		$11,263,200	$0
	Collection				
	Total	$84,010,000	40.61%	$34,116,100	$42,710,000
	Subtotal	$84,010,000	40.61%	$34,116,100	$42,710,000
	Total	**$525,698,032**	20.41%	**$107,278,596**	**$43,590,000**

Two important policies relative to the above project list that serves as the basis for the improvement fee calculations warrant comment:

1. As set forth by Salem Revised Code (SRC) 66.110 and 120, the specific location, size and capacity of utility improvement projects will be determined with reference to any one or combination of the following: 1) the applicable Master Plan or, 2) specific engineering capacity studies approved by the Director of Public Works. With respect to facilities not shown in the Master Plan but necessary to link to adequate facilities, the location, size and capacity of such facilities to be constructed or linked to shall be determined by the Development Review Committee. SRC 66.040 further defines the Development Review Committee as being composed of city management staff and appointed by the city manager from the departments of public works, community services, fire, or community development.

2. As set forth by the most recent Water System Master Plan Amendment, the pipe sizes identified in the Master Plan for the individual projects reflect the required minimum pipe size at the minimum acceptable slope (per City of Salem Public Works Design Standards) to convey the projected design flows under Comprehensive Plan build out conditions. Pipe sizes will be evaluated and refined as necessary by each project's design engineer during the conceptual and detailed final design for each project. The ultimately selected pipe size may be different than that shown if prevailing site conditions and projected water demands allow such a modification as ultimately determined by the design engineer to the satisfaction of the Public Works Director.

Table B-2

City of Salem

Calculation of Weighted Average Pump System Available Capacity

STATION	Owner	Future Change	PS Firm Capacity (gpm)	PS Firm Capacity (cfs)	PS Total Capacity (gpm)	PS Total Capacity (cfs)	5 Yr Storm Flow from Model to Sta (cfs)	% Available Capacity for Growth	Future Abandon?	Weighted % Available Capacity for Growth
AIRPORT	SALEM		37,500	83.55	50,000	111.40	41.33	50.5%		17.0%
ALDERSGATE	TURNER	Station to be Abandoned	260	0.00	520	1.16	0.00	0.0%		0.0%
ALEXANDER	SALEM		1,490	3.32	2,980	6.64	4.04	0.0%		0.0%
BATTLE CREEK	SALEM		3,123	6.96	4,164	9.28	8.25	0.0%		0.0%
BIRCH	TURNER		1,100	0.00	2,200	4.90	0.00	0.0%		0.0%
CHEMAWA	SALEM	Station to be Abandoned	2,400	5.35	3,600	8.02	4.05	24.3%	Yes	0.0%
CHURCH	SALEM		1,600	3.56	3,200	7.13	3.84	0.0%		0.0%
~~CLEAR LAKE~~	0		0	0.00	0	0.00	0.00	0.0%		0.0%
CORDON	SALEM		7,608	16.95	11,412	25.43	4.05	76.1%		5.2%
~~DEARB0RN~~	0		0	0.00	400	0.89	0.00	0.0%		0.0%
~~ELIZABETH~~	0		0	0.00	400	0.89	0.00	0.0%		0.0%
FERRY	SALEM		500	1.11	2,000	4.46	2.30	0.0%		0.0%
GREENBRIAR	SALEM	Station to be Abandoned	250	0.56	2,750	6.13	0.22	60.5%	Yes	0.0%
HAYESVILLE	SALEM	Station to be Abandoned	780	1.74	1,260	2.81	1.47	15.4%	Yes	0.0%
JADE	SALEM		400	0.89	800	1.78	1.00	0.0%		0.0%
JOPLIN	SALEM	Station to be Abandoned	200	0.45	400	0.89	0.50	0.0%	Yes	0.0%
KEIZER	SALEM	Future portion of basin to be removed from PS, but, existing PS capacity to remain	270	0.60	540	1.20	0.83	0.0%		0.0%
LABISH	SALEM		370	0.82	740	1.65	0.99	0.0%		0.0%
LARMER	SALEM		100	0.22	200	0.45	0.30	0.0%		0.0%
~~MACLEAY~~	0		0	0.00	400	0.89	0.00	0.0%		0.0%
MAHRT	SALEM	Station to be Abandoned	600	1.34	1,200	2.67	1.10	17.7%		0.1%
MIDDLE GROVE	SALEM		620	1.38	1,250	2.79	0.77	44.3%		0.2%
MISSION	SALEM		6,978	15.55	10,467	23.32	7.19	53.8%		3.4%
NORTH RIVER RD	SALEM		28,000	62.38	42,000	93.58	125.00	0.0%		0.0%
RIVERCREST	SALEM	Station to be Abandoned	230	0.51	460	1.02	0.60	0.0%	Yes	0.0%

Table B-2 continued

City of Salem

Calculation of Weighted Average Pump System Available Capacity

STATION	Owner	Future Change	PS Firm Capacity (gpm)	PS Firm Capacity (cfs)	PS Total Capacity (gpm)	PS Total Capacity (cfs)	5 Yr Storm Flow from Model to Sta (cfs)	% Available Capacity for Growth	Future Abandon?	Weighted % Available Capacity for Growth
SANDRA LANE	TURNER		230	0.00	460	1.02	0.00	0.0%		0.0%
SATTER UP	SALEM	Station to be Abandoned	1,750	3.90	3,500	7.80	4.00	0.0%	Yes	0.0%
SATTER LOW	SALEM	Station to be Abandoned	800	1.78	1,600	3.56	0.77	56.8%	Yes	0.0%
STATE	SALEM	Station to be Abandoned	732	1.63	1,464	3.26	2.69	0.0%	Yes	0.0%
STONEWAY	SALEM		230	0.51	460	1.02	1.42	0.0%		0.0%
SUNSET MEADOWS	SALEM	Station to be Abandoned	230	0.51	460	1.02	0.70	0.0%	Yes	0.0%
TURNER MAIN	TURNER		1,550	0.00	3,100	6.91	0.00	0.0%		0.0%
UNION	SALEM	Station to be Abandoned	350	0.78	700	1.56	1.35	0.0%	Yes	0.0%
WALLACE MARINE PARK	SALEM		0	0.00	0	0.00	0.00	0.0%		0.0%
~~WALLACE~~	0		0	0.00	13,500	30.08	0.00	0.0%		0.0%
~~WEATLAND~~	0		0	0.00	0	0.00	0.00	0.0%		0.0%
WEST SALEM	SALEM		14,200	31.64	26,100	58.15	29.09	8.1%		1.0%
WINDSTONE	SALEM		300	0.67	600	1.34	1.10	0.0%		0.0%
				248.67		**Percent of Exist Pump Station Capacity Available**				**26.9%**

Table B-3

Calculation of Weighted Average Distribution System Available Capacity

LENGTH	From_	To	SIZE	FILENO	in_dia_mi	Q_full	Q_max	Avail Cap (%)	Weighted Avail. Cap
6,662.91	45-448006	45-446025	21	70S4	26.500	7.223	4.000	44.6%	0.4%
1,289.39	42-446050	42-446012	21	915065	5.128	12.710	7.820	38.5%	0.1%
3,530.32	42-446052	42-446051	18	915065	12.035	4.310	0.000	100.0%	0.4%
1,038.11	42-446070	42-446012	12	76S90A	2.359	2.240	0.500	77.7%	0.1%
1,887.44	45-444053	45-444039	36	70S4	12.869	29.900	14.290	52.2%	0.2%
4,957.69	51-504006	51-504005	18	925049	16.901	4.500	0.000	100.0%	0.5%
3,293.00	48-502116	48-502084	24	925017	14.968	7.000	0.000	100.0%	0.4%
1,112.62	51-502012	51-502011	24	925017	5.057	7.200	0.000	100.0%	0.2%
714.66	39-498001	39-498002	75	62S112	10.151	0.000	0.000	0.0%	0.0%
4,788.09	42-498007	42-498006	36	851003	32.646	20.000	0.000	100.0%	1.0%
1,209.75	48-500076	48-500016	30	891066	6.874	13.000	0.000	100.0%	0.2%
5,521.29	45-498002	45-498009	12	K4/30	12.548	0.000	0.000	0.0%	0.0%
2,337.94	39-496031	39-496032	12	901025	5.313	1.600	0.000	100.0%	0.2%
1,043.50	42-496004	42-496003	12	K1/1	2.372	0.000	0.000	0.0%	0.0%
6,694.51	45-496404	45-496021	72	62S112	91.289	0.000	0.000	0.0%	0.0%
4,131.85	48-494040	48-494042	15	K4/16	11.738	2.000	0.000	100.0%	0.4%
3,255.95	48-492048	48-492049	24	K5/6	14.800	0.000	0.000	0.0%	0.0%
1,344.81	57-492027	57-492019	15	E1/4	3.820	0.000	0.000	0.0%	0.0%
1,770.44	60-492014	60-492070	12	E1/5	4.024	0.000	0.000	0.0%	0.0%
2,561.04	33-490032	33-488081	15	72S56	7.276	0.000	0.000	0.0%	0.0%
10,043.52	48-490035	48-490036	72	62S112	136.957	0.000	0.000	0.0%	0.0%
909.14	51-488007	48-488046	20	73S122B	3.444	0.000	0.000	0.0%	0.0%
3,544.22	48-488050	48-488048	15	80S258	10.069	0.000	0.000	0.0%	0.0%
5,364.57	51-488041	51-488020	60	810268	60.961	0.000	0.000	0.0%	0.0%
3,861.48	48-490053	48-490052	66	810268	48.268	0.000	0.000	0.0%	0.0%
5,234.21	51-490022	51-490023	18	77S297	17.844	0.000	0.000	0.0%	0.0%
1,079.13	57-488003	57-488004	21	E1/1	4.292	0.000	0.000	0.0%	0.0%
2,234.24	33-486009	33-486014	21	69S50	8.886	8.084	5.840	27.8%	0.1%
1,709.28	36-486008	36-486009	36	68S2	11.654	26.436	12.550	52.5%	0.2%
2,868.01	51-488009	51-488010	18	73S122B	9.777	0.000	0.000	0.0%	0.0%
2,462.65	36-484057	36-484058	54	930217	25.186	42.800	9.300	78.3%	0.6%
1,173.37	36-482022	36-482023	18	68S2	4.000	0.000	0.000	0.0%	0.0%
811.43	42-484006	42-484022	72	47S101	11.065	114.492	106.060	7.4%	0.0%
2,036.48	45-484030	45-484029	15	59S104	5.785	0.000	0.000	0.0%	0.0%
6,220.07	45-484039	45-484038	48	50S102	56.546	0.000	0.000	0.0%	0.0%
1,456.96	48-482037	48-484004	15	B9P52	4.139	3.211	1.940	39.6%	0.0%
1,293.14	45-482006	45-482007	36	81S224	8.817	0.000	0.000	0.0%	0.0%
4,510.88	51-484021	51-484018	27	51S102	23.067	0.000	0.000	0.0%	0.0%
6,088.59	48-484028	48-484029	15	B10P70	17.297	0.000	0.000	0.0%	0.0%
2,425.80	51-484029	51-484028	12	51S104	5.513	0.000	0.000	0.0%	0.0%
556.77	54-482001	54-484017	12	56S113	1.265	1.951	0.620	68.2%	0.0%
2,587.70	51-482037	51-482036	18	50S102	8.822	3.424	2.440	28.7%	0.1%
5,979.50	54-484057	54-484056	30	STORTZ	33.974	0.000	0.000	0.0%	0.0%
2,258.40	57-484036	57-484034	18	ESSA/12	7.699	0.000	0.000	0.0%	0.0%

Table B-3 continued

Calculation of Weighted Average Distribution System Available Capacity

LENGTH	From_	To	SIZE	FILENO	in_dia_mi	Q_full	Q_max	Avail Cap (%)	Weighted Avail. Cap
20,508.20	57-484034	57-484033	54	ESSA/12	209.743	0.000	0.000	0.0%	0.0%
1,178.67	54-484053	54-484056	21	703026	4.688	0.000	0.000	0.0%	0.0%
3,192.88	54-484059	54-484050	12	E2/2	7.257	0.000	0.000	0.0%	0.0%
576.56	36-482016	36-482017	24	68S2	2.621	0.000	0.000	0.0%	0.0%
489.40	36-480025	36-482015	18	68S2	1.668	15.176	13.320	12.2%	0.0%
1,337.68	36-480002	36-480001	24	68S2	6.080	0.000	0.000	0.0%	0.0%
738.41	48-482042	48-482043	12	82S230	1.678	0.000	0.000	0.0%	0.0%
2,977.94	45-482032	45-482017	14	71S91	7.896	0.000	0.000	0.0%	0.0%
786.22	45-480065	45-482073	12	66S36	1.787	2.567	0.700	72.7%	0.0%
1,728.80	45-480002	45-482011	30	10S107	9.823	0.000	0.000	0.0%	0.0%
1,024.16	51-480033	51-480032	12	55S110	2.328	0.000	0.000	0.0%	0.0%
9,787.25	51-480005	51-480401	30	B8P22	55.609	0.000	0.000	0.0%	0.0%
3,454.49	27-478052	27-478053	15	74S69B	9.814	9.752	4.480	54.1%	0.2%
1,068.24	24-476002	24-476003	12	77S11	2.428	5.169	1.650	68.1%	0.0%
8,050.12	33-478006	33-478020	18	74S69B	27.444	9.981	8.310	16.7%	0.1%
928.37	39-478058	39-478018	15	52S102	2.637	6.342	4.370	31.1%	0.0%
4,084.13	36-476090	36-476091	15	52S102	11.603	0.000	0.000	0.0%	0.0%
1,323.32	39-476002	39-476003	12	B9P15	3.008	1.467	0.540	63.2%	0.1%
2,212.81	42-478064	42-478063	15	890218	6.286	0.000	0.000	0.0%	0.0%
8,861.16	39-478094	39-478093	42	930217	70.487	20.434	9.250	54.7%	1.2%
41.17	42-476008	42-476005	15	UNK	0.117	2.257	1.350	40.2%	0.0%
413.56	45-478042	45-478045	18	70S15	1.410	0.000	0.000	0.0%	0.0%
2,223.32	48-478104	45-478087	18	950230	7.580	0.000	0.000	0.0%	0.0%
1,866.62	45-478067	45-478061	18	64S1	6.363	0.000	0.000	0.0%	0.0%
1,923.85	48-478045	48-478031	12	870213	4.372	0.000	0.000	0.0%	0.0%
1,592.40	45-476011	45-478017	24	61S108	7.238	0.000	0.000	0.0%	0.0%
1,201.11	45-476084	45-476057	21	B1P133	4.777	0.000	0.000	0.0%	0.0%
1,387.30	45-476032	45-476033	14	81S261	3.678	1.854	0.900	51.5%	0.1%
812.81	51-478041	51-478040	12	B9P97A	1.847	0.000	0.000	0.0%	0.0%
2,616.35	51-478031	51-478057	15	51S104	7.433	0.000	0.000	0.0%	0.0%
5,794.32	51-476082	51-476083	18	57S103	19.753	0.000	0.000	0.0%	0.0%
4,085.45	57-476015	57-476001	27	E5/2	20.892	0.000	0.000	0.0%	0.0%
2,846.48	54-476031	54-476030	21	E3/1	11.321	0.000	0.000	0.0%	0.0%
2,360.97	60-478011	60-478007	15	ESSA/12	6.707	0.000	0.000	0.0%	0.0%
2,491.31	60-478034	60-478035	15	ESSA/16	7.078	0.000	0.000	0.0%	0.0%
922.89	39-476016	39-476022	15	B9P46	2.622	2.233	0.540	75.8%	0.1%
643.71	33-476109	36-476021	12	B9P20	1.463	0.000	0.000	0.0%	0.0%
323.78	36-476102	36-476119	12	77S179	0.736	3.530	1.200	66.0%	0.0%
1,776.27	39-476023	39-476024	24	52S102	8.074	0.000	0.000	0.0%	0.0%
2,536.85	42-474051	42-476074	48	47S104	23.062	0.000	0.000	0.0%	0.0%
2,582.52	42-474057	42-474050	48	67S42	23.477	0.000	0.000	0.0%	0.0%
432.11	42-474086	42-474062	24	20S103	1.964	0.000	0.000	0.0%	0.0%
655.93	42-474041	42-474065	21	1881	2.609	0.000	0.000	0.0%	0.0%
2,773.08	42-474036	42-474033	18	78S241	9.454	0.000	0.000	0.0%	0.0%

Table B-3 continued

Calculation of Weighted Average Distribution System Available Capacity

LENGTH	From_	To	SIZE	FILENO	in_dia_mi	Q_full	Q_max	Avail Cap (%)	Weighted Avail. Cap
858.75	42-474077	42-474037	15	75S96	2.440	0.000	0.000	0.0%	0.0%
2,504.92	42-476095	42-476043	15	UNK	7.116	0.000	0.000	0.0%	0.0%
1,827.46	45-474032	45-474026	16	85S241	5.538	0.000	0.000	0.0%	0.0%
2,666.07	45-474058	45-474057	12	80S246	6.059	0.000	0.000	0.0%	0.0%
2,241.48	45-474044	45-474042	18	20S103	7.641	0.000	0.000	0.0%	0.0%
170.78	45-474048	45-474047	12	80S245	0.388	0.000	0.000	0.0%	0.0%
2,180.45	48-476061	48-476044	12	10S105	4.956	0.000	0.000	0.0%	0.0%
1,448.02	51-474053	51-474040	12	57S107	3.291	0.000	0.000	0.0%	0.0%
1,931.66	54-474012	54-474011	12	59S105A	4.390	0.000	0.000	0.0%	0.0%
6,113.32	54-474036	54-474037	18	E3/4	20.841	0.000	0.000	0.0%	0.0%
3,881.30	57-474012	57-474011	24	E1/4	17.642	0.000	0.000	0.0%	0.0%
1,748.58	33-472040	33-472041	12	871016	3.974	1.605	1.410	12.1%	0.0%
1,633.85	30-470010	30-470011	12	71S74A	3.713	1.546	1.420	8.2%	0.0%
452.37	42-472119	42-472118	30	880200	2.570	0.000	0.000	0.0%	0.0%
2,606.03	42-472053	42-472060	48	67S42	23.691	0.000	0.000	0.0%	0.0%
347.93	42-472042	42-472052	36	79S235	2.372	0.000	0.000	0.0%	0.0%
3,074.31	42-472075	42-472074	15	980208	8.734	0.000	0.000	0.0%	0.0%
761.07	42-472031	42-472034	42	UNKNOWN	6.054	40.502	20.160	50.2%	0.1%
1,763.69	42-470034	42-470033	13	83S240	4.342	2.265	2.160	4.6%	0.0%
2,607.96	39-470056	42-470001	14	80S243	6.915	0.000	0.000	0.0%	0.0%
2,494.18	39-470006	39-470005	36	900225	17.006	13.000	6.500	50.0%	0.3%
3,038.22	42-470023	42-470021	42	67S42	24.168	0.000	0.000	0.0%	0.0%
2,263.87	42-472126	42-472125	30	880200	12.863	0.000	0.000	0.0%	0.0%
2,408.63	45-472031	45-472030	36	900211	16.422	0.000	0.000	0.0%	0.0%
4,142.48	45-472053	45-472052	24	79S215	18.829	12.457	7.820	37.2%	0.2%
1,149.52	45-472080	45-472073	18	880202	3.919	0.000	0.000	0.0%	0.0%
1,384.50	45-470061	45-470054	12	880214	3.147	2.000	0.000	100.0%	0.1%
1,342.28	48-470086	48-472091	20	79S211B	5.084	0.000	0.000	0.0%	0.0%
1,756.67	48-470094	48-470093	18	77S200A	5.989	0.000	0.000	0.0%	0.0%
4,242.98	36-468002	36-468001	24	77S441	19.286	4.420	1.460	67.0%	0.4%
2,255.17	42-468058	42-468081	12	B3P93	5.125	0.000	0.000	0.0%	0.0%
3,078.09	42-468087	42-468085	30	UNK	17.489	23.140	17.630	23.8%	0.1%
2,922.97	42-468126	42-468096	36	67S42	19.929	0.000	0.000	0.0%	0.0%
1,044.07	45-468017	45-468016	12	80S264	2.373	0.000	0.000	0.0%	0.0%
2,395.76	45-468036	45-468028	18	UNK	8.167	0.000	0.000	0.0%	0.0%
4,587.56	45-468044	45-468037	15	B10P108	13.033	0.000	0.000	0.0%	0.0%
735.32	48-468020	48-468010	12	B10P116	1.671	0.000	0.000	0.0%	0.0%
3,200.76	51-468015	51-468014	15	77S221	9.093	0.000	0.000	0.0%	0.0%
3,056.62	51-468007	51-468006	15	77S200A	8.684	0.000	0.000	0.0%	0.0%
2,155.34	54-468036	54-468037	12	880218	4.899	0.000	0.000	0.0%	0.0%
4,588.20	57-468032	57-468035	48	ESSA/12	41.711	73.130	58.360	20.2%	0.3%
826.62	60-468010	60-468002	12	E6/10	1.879	0.000	0.000	0.0%	0.0%
7,182.34	33-464066	33-464067	36	900225	48.971	19.460	4.700	75.8%	1.1%
2,831.49	36-466052	36-466007	18	b11p51	9.653	3.483	1.010	71.0%	0.2%

Table B-3 continued

Calculation of Weighted Average Distribution System Available Capacity

LENGTH	From_	To	SIZE	FILENO	in_dia_mi	Q_full	Q_max	Avail Cap (%)	Weighted Avail. Cap
716.85	42-466067	42-466075	15	48S103	2.036	0.000	0.000	0.0%	0.0%
5,091.95	45-466025	45-466024	12	73S94A	11.573	0.000	0.000	0.0%	0.0%
763.12	45-464018	45-464019	12	960216	1.734	0.000	0.000	0.0%	0.0%
1,724.06	51-466004	51-466003	21	81S213	6.857	0.000	0.000	0.0%	0.0%
3,226.62	57-466019	57-466015	15	E3/28	9.167	0.000	0.000	0.0%	0.0%
692.52	57-464050	57-464025	42	ESSA/12	5.509	52.521	51.640	1.7%	0.0%
1,525.72	60-464012	60-464011	12	ESMSI14	3.468	0.000	0.000	0.0%	0.0%
1,074.96	33-462002	33-462003	18	77S422	3.665	3.258	2.220	31.9%	0.0%
1,124.49	45-462044	45-462045	24	PCI P6	5.111	0.000	0.000	0.0%	0.0%
1,200.96	48-462025	48-462014	24	68S63	5.459	0.000	0.000	0.0%	0.0%
1,923.19	48-462008	48-462007	30	68S63	10.927	0.000	0.000	0.0%	0.0%
3,885.93	48-462030	48-462008	12	920612	8.832	0.000	0.000	0.0%	0.0%
6,017.28	54-462010	51-462001	18	84S217	20.513	0.000	0.000	0.0%	0.0%
3,541.33	45-460065	45-460064	21	PCI 7	14.085	0.000	0.000	0.0%	0.0%
1,886.14	45-458055	45-460091	24	870200	8.573	0.000	0.000	0.0%	0.0%
2,656.62	48-458030	48-458029	27	82S222	13.585	0.000	0.000	0.0%	0.0%
1,003.47	45-458051	45-458043	18	PCI P10	3.421	0.000	0.000	0.0%	0.0%
3,880.35	48-460018	48-460016	27	73S96B	19.843	0.000	0.000	0.0%	0.0%
3,398.15	51-458022	51-458021	36	950221	23.169	0.000	0.000	0.0%	0.0%
6,380.30	42-456094	42-456023	27	870200	32.627	0.000	0.000	0.0%	0.0%
7,102.72	48-456005	48-456004	15	73S968	20.178	0.000	0.000	0.0%	0.0%
2,297.56	54-456015	54-456014	27	950221	11.749	0.000	0.000	0.0%	0.0%
4,183.70	36-454091	39-454108	21	950225	16.640	0.000	0.000	0.0%	0.0%
3,073.54	45-452009	45-452010	18	73S96B	10.478	6.877	0.760	88.9%	0.3%
1,505.84	36-450014	36-450026	12	76S206B	3.422	3.276	1.260	61.5%	0.1%
4,421.69	39-450048	39-450049	15	871006	12.562	5.560	2.230	59.9%	0.2%
11,380.21	45-450021	48-450006	24	81S270	51.728	0.000	0.000	0.0%	0.0%
4,153.94	48-506019	48-506018	12	965003	9.441	0.000	0.000	0.0%	0.0%
1,618.79	48-504045	48-504044	12	925039	3.679	1.600	0.000	100.0%	0.1%
1,849.95	42-498023	42-496087	21	851003	7.358	0.000	0.000	0.0%	0.0%
1,540.66	45-480079	45-478084	27	950230	7.878	0.000	0.000	0.0%	0.0%
1,144.81	39-476042	39-476043	36	930217	7.805	22.614	8.614	61.9%	0.1%
1,687.09	33-464072	33-464073	27	900225	8.627	11.970	0.000	100.0%	0.3%
2,050.03	42-476044	42-474050	24	50S101	9.318	8.905	2.940	67.0%	0.2%
1,135.87	42-466084	42-466089	24	48S103	5.163	0.000	0.000	0.0%	0.0%
2,360.65	36-484033	36-486018	36	68S2	16.095	26.479	16.480	37.8%	0.2%
126.66	48-484004	48-484005	12	B9P52	0.288	0.000	0.000	0.0%	0.0%
3,515.42	42-482022	42-482402	60	47S101	39.948	0.000	0.000	0.0%	0.0%
3,536.26	39-466051	39-466060	15	771354	10.046	0.000	0.000	0.0%	0.0%
2,287.52	45-474010	45-474087	24	UNK	10.398	0.000	0.000	0.0%	0.0%
4,360.89	45-478015	45-478014	60	47S101	49.556	0.000	0.000	0.0%	0.0%
2,342.32	42-470024	42-470022	36	83S216	15.970	23.553	19.900	15.5%	0.1%
4,114.57	54-494009	54-494008	20	77S297	15.585	0.000	0.000	0.0%	0.0%
293.57	42-456092	42-456018	15	P6/1A	0.834	4.149	0.000	100.0%	0.0%

Table B-3 continued

Calculation of Weighted Average Distribution System Available Capacity

LENGTH	From_	To	SIZE	FILENO	in_dia_mi	Q_full	Q_max	Avail Cap (%)	Weighted Avail. Cap
2,055.95	51-482015	51-484008	36	50S102	14.018	0.000	0.000	0.0%	0.0%
2,639.18	42-478059	42-480035	24	10S107	11.996	0.000	0.000	0.0%	0.0%
481.34	36-454002	36-454077	12	PCI/P19	1.094	4.826	0.000	100.0%	0.0%
802.24	42-470059	45-470002	24	810255	3.647	0.000	0.000	0.0%	0.0%
2,396.60	45-480074	45-478042	18	70S15	8.170	0.000	0.000	0.0%	0.0%
1,049.23	57-476029	57-476030	18	ESSA/12	3.577	0.000	0.000	0.0%	0.0%
4,358.11	60-468003	60-468002	18	ESMSI/1	14.857	0.000	0.000	0.0%	0.0%
7,083.96	60-494001	57-494019	18	820259	24.150	0.000	0.000	0.0%	0.0%
3,119.13	39-446017	39-446016	12	915065	7.089	2.400	0.000	100.0%	0.2%
1,579.82	42-446034	45-446007	27	71S2	8.079	18.554	8.530	54.0%	0.1%
788.26	42-472052	42-472118	48	UNK	7.166	0.000	0.000	0.0%	0.0%
2,155.40	42-470050	42-470059	21	B10P255	8.573	0.000	0.000	0.0%	0.0%
1,352.14	48-470001	48-472023	12	72S88	3.073	1.345	0.680	49.4%	0.0%
4,076.50	57-472051	57-472052	21	ESMSI/7	16.213	0.000	0.000	0.0%	0.0%
2,546.18	57-492019	57-490017	18	E1/3	8.680	0.000	0.000	0.0%	0.0%
361.27	42-482014	42-482024	15	47S101	1.026	0.000	0.000	0.0%	0.0%
2,629.71	33-474031	33-472022	12	63s19	5.977	3.490	2.990	14.3%	0.0%
4,798.34	60-482047	60-482040	18	ESSAI/1	16.358	0.000	0.000	0.0%	0.0%
1,489.53	33-486059	33-486034	24	69S50	6.771	13.705	6.600	51.8%	0.1%
679.38	36-474055	36-476119	12	B8P81	1.544	0.000	0.000	0.0%	0.0%
1,004.10	42-472137	42-472116	18	850216	3.423	14.896	10.040	32.6%	0.0%
1,379.67	51-456001	51-458027	27	81S270	7.055	0.000	0.000	0.0%	0.0%
2,634.95	54-486046	54-486402	54	810268	26.948	88.058	86.840	1.4%	0.0%
1,752.78	45-476072	45-476073	14	80S245	4.648	0.000	0.000	0.0%	0.0%
1,874.62	48-482054	48-482053	15	51S102	5.326	0.000	0.000	0.0%	0.0%
413.92	42-472038	42-472039	30	79S235	2.352	0.000	0.000	0.0%	0.0%
2,564.46	57-464054	57-464057	12	985020	5.828	0.000	0.000	0.0%	0.0%
131.89	42-466066	42-466067	12	B6P47	0.300	17.190	4.950	71.2%	0.0%
1,124.86	39-462113	39-462111	15	68S101	3.196	0.000	0.000	0.0%	0.0%
3,642.54	33-460007	33-460008	18	68S64	12.418	4.330	3.410	21.2%	0.1%
1,071.75	42-456005	42-456091	24	870200	4.872	0.000	0.000	0.0%	0.0%
1,130.53	51-458020	51-458010	30	82S222	6.423	0.000	0.000	0.0%	0.0%
1,789.47	36-454088	36-454079	18	950225	6.100	12.500	0.000	100.0%	0.2%
1,023.80	60-462039	60-462040	15	880216	2.909	0.000	0.000	0.0%	0.0%
432.63	42-466128	42-466083	27	PC12	2.212	0.000	0.000	0.0%	0.0%
5,881.70	42-464109	42-464108	21	950226	23.393	12.000	11.130	7.2%	0.1%
2,499.45	48-466010	48-466009	12	980206	5.681	0.000	0.000	0.0%	0.0%
512.43	39-474004	39-474005	15	77S179	1.456	4.500	1.200	73.3%	0.0%
3,011.50	36-474088	36-474089	27	960218	15.400	5.274	4.547	13.8%	0.1%
1,234.02	33-472035	36-472001	15	63S19	3.506	0.000	0.000	0.0%	0.0%
662.41	57-468401	57-468039	21	ESSA/12	2.635	0.000	0.000	0.0%	0.0%
505.91	36-474096	36-474089	12	960218	1.150	1.390	1.350	2.9%	0.0%
1,292.92	45-474094	45-474093	18	700025	4.408	0.000	0.000	0.0%	0.0%
1,673.40	48-474094	48-474093	15	980232	4.754	0.000	0.000	0.0%	0.0%

Table B-3 continued

Calculation of Weighted Average Distribution System Available Capacity

LENGTH	From_	To	SIZE	FILENO	in_dia_mi	Q_full	Q_max	Avail Cap (%)	Weighted Avail. Cap
487.97	48-474100	48-474099	12	980232	1.109	0.000	0.000	0.0%	0.0%
1,099.21	48-478116	48-478108	15	950230	3.123	0.000	0.000	0.0%	0.0%
2,102.96	48-482065	48-482064	12	980229	4.779	1.400	0.000	100.0%	0.1%
3,936.55	39-460127	39-460050	18	950226	13.420	0.000	0.000	0.0%	0.0%
3,938.57	51-458026	51-458025	30	950221	22.378	0.000	0.000	0.0%	0.0%
3,536.06	48-506072	48-506016	12	985071	8.036	0.000	0.000	0.0%	0.0%
1,997.82	39-474009	39-476053	30	960218	11.351	9.855	5.629	42.9%	0.1%
1,989.25	33-472048	33-472049	24	960218	9.042	5.110	4.107	19.6%	0.1%
1,412.88	36-472002	36-472001	12	960218	3.211	8.813	0.980	88.9%	0.1%
8,993.43	51-502033	51-502032	18	799712	30.659	0.000	0.000	0.0%	0.0%
1,444.28	36-484037	36-484059	24	68S2	6.565	0.000	0.000	0.0%	0.0%
388.49	45-474017	45-474088	30	86S212	2.207	0.000	0.000	0.0%	0.0%
395.96	33-472020	33-472037	15	63S19	1.125	0.000	0.000	0.0%	0.0%
2,300.35	51-488026	51-488025	15	57S105	6.535	0.000	0.000	0.0%	0.0%
1,184.30	45-474049	45-474095	12	80S245	2.692	0.000	0.000	0.0%	0.0%
1,262.28	45-470401	45-470093	15	880214	3.586	4.100	0.000	100.0%	0.1%
2,500.09	48-472130	48-472165	27	900211	12.785	0.000	0.000	0.0%	0.0%
7,631.94	57-488041	57-488029	21	ES/6	30.354	0.000	0.000	0.0%	0.0%
1,561.51	48-444020	45-444066	12	799077	3.549	1.870	0.000	100.0%	0.1%
344.10	57-454002	57-454001	21	950221	1.369	0.000	0.000	0.0%	0.0%
564.10	45-444069	45-444042	18	799077	1.923	3.940	0.000	100.0%	0.1%
2,492.46	63-440032	63-440033	21	980229A	9.913	0.000	0.000	0.0%	0.0%
371.69	60-440003	60-440004	18	980229A	1.267	0.000	0.000	0.0%	0.0%
478.09	63-440023	63-440024	15	980229A	1.358	0.000	0.000	0.0%	0.0%
886.39	57-494020	57-494001	27	820258	4.533	0.000	0.000	0.0%	0.0%
691.74	57-488027	57-488042	24	ES/6	3.144	0.000	0.000	0.0%	0.0%
1,050.14	48-478117	48-478116	12	980230	2.387	0.000	0.000	0.0%	0.0%
2,351.98	42-454072	42-454077	15	700000	6.682	1.670	1.500	10.2%	0.0%
610.22	45-470021	45-470004	14	81S256	1.618	3.921	2.000	49.0%	0.0%
376.12	39-476063	39-476064	12	701106	0.855	0.000	0.000	0.0%	0.0%
2,748.92	42-496104	42-496103	18	701107	9.371	0.000	0.000	0.0%	0.0%
1,592.03	42-494084	42-494083	15	701107	4.523	0.000	0.000	0.0%	0.0%
479.24	33-486077	33-486073	12	702040	1.089	0.000	0.000	0.0%	0.0%
1,773.01	42-458110	42-458109	12	701023	4.030	0.000	0.000	0.0%	0.0%
58.78	57-474047	57-472037	15	UNK	0.167	0.000	0.000	0.0%	0.0%
448.78	42-474402	42-474056	36	UNK	3.060	0.000	0.000	0.0%	0.0%
2,313.23	42-484401	42-484006	72	47S101	31.544	0.000	0.000	0.0%	0.0%
7,797.73	45-496401	42-496080	75	62S112	110.763	0.000	0.000	0.0%	0.0%
994.17	60-468026	60-468022	15	701071	2.824	0.000	0.000	0.0%	0.0%
9.34	45-458050	45-458051	12	960216	0.021	0.000	0.000	0.0%	0.0%
849.45	57-488018	57-488039	15	ESSA/12	2.413	0.000	0.000	0.0%	0.0%
773.95	42-474113	42-474114	48	702055	7.036	0.000	0.000	0.0%	0.0%
451.57	42-474114	42-474115	48	702055	4.105	0.000	0.000	0.0%	0.0%
386.64	42-474116	42-474117	48	702055	3.515	0.000	0.000	0.0%	0.0%

Table B-3 continued

Calculation of Weighted Average Distribution System Available Capacity

LENGTH	From_	To	SIZE	FILENO	in_dia_mi	Q_full	Q_max	Avail Cap (%)	Weighted Avail. Cap
1,310.42	42-474117	42-474118	48	702055	11.913	0.000	0.000	0.0%	0.0%
1,742.86	42-474052	42-476098	48	20S103	15.844	0.000	0.000	0.0%	0.0%
2,186.63	42-476072	42-476099	48	80S204	19.878	0.000	0.000	0.0%	0.0%
4,530.04	45-466049	45-466045	42	960216	36.034	0.000	0.000	0.0%	0.0%
52.23	42-466107	42-466128	18	960216	0.178	0.000	0.000	0.0%	0.0%
1,119.85	60-468020	60-468027	12	81026	2.545	0.000	0.000	0.0%	0.0%
1,340.76	60-468060	60-468050	12	E6/11	3.047	0.000	0.000	0.0%	0.0%
5,604.14	30-462027	30-462028	24	703788	25.473	6.140	0.000	100.0%	0.8%
4,645.23	24-462009	24-462008	15	703788	13.197	2.480	0.000	100.0%	0.4%
1,138.64	48-480051	48-480052	10	76S294	2.157	0.000	0.000	0.0%	0.0%
23.95	45-460092	45-460087	6	960216	0.027	0.000	0.000	0.0%	0.0%
694.00	45-460092	48-460027	10	870200	1.314	0.000	0.000	0.0%	0.0%
431.45	42-474118	42-474091	8	701754	0.654	0.000	0.000	0.0%	0.0%
453.62	42-474114	42-474083	10	71S12A	0.859	0.000	0.000	0.0%	0.0%
					3327.451	**Percent of Exist Collection System Capacity Available**			**13.9%**

Table B-4
City of Salem
Wastewater System Construction Work in Progress 2006

Project No	Cost Center	Project Name	Total	Admin	Collection	Treatment Plant	WWTF	Headworks	Interim Solids	Pumping	Total
58903010	700035	CIP Management-Sanitar	2,040,145	2,040,145							2,040,145
	700054	Hoyt St-Main Replaceme	179,097		179,097						179,097
	701020	N Central #5,9,12,13 S	2,351,578		2,351,578						2,351,578
	701025	Lateral Retrofit Previ	2,407,191		2,407,191						2,407,191
	701072	Labish Swr Station Rec	1,065,481							1,065,481	1,065,481
58903010	702043	E Belmont Basin #4-Swr	1,750,541		1,750,541						1,750,541
	703031	Market/Baker/16th-Pipe	1,117,249		1,117,249						1,117,249
	703035	Fish Barrier/Pringle W	224,998		224,998						224,998
	704022	State St San Swr Pump	457,706							457,706	457,706
	704061	DPSST Gravity Sanitary	1,077,235		1,077,235						1,077,235
	705110	Wstwtr Sys R&R-Schem D	99,999		99,999						99,999
	705112	Vactor Wst Dewtr-Pln/P	621,000		621,000						621,000
	705114	ROW Acq-1446 Center St	110,003		110,003						110,003
	980245	Sewer Rehab Defer Ln P	2,112,954		2,112,954						2,112,954
	998549	Sewer Unspecified Proj	1,819,940		1,819,940						1,819,940
	998556	Rdway Restore For Util	231,809		231,809						231,809
58903020	700068	Debt Service-ECF-Sewer	730,010		N/A						0
	702062	WLTP Non-Process Facil	1,790,417			1,790,417					1,790,417
	706105	River Rd Wet Weather F	3,632,000				3,632,000				3,632,000
	799075	Swr Imprv-Dvl Pass-Thr	939,720		N/A						0
	980248	SDC Admin-Sewer	287,228	287,228							287,228
	998810	Trans of Int Earnings-	721,662		N/A						0
58904055	998806	Bond I Sani Swr-CIP Mg	30,998	30,998							30,998
58904525	704201	WLTP Non-Process Facil	2,667,105			2,667,105					2,667,105
58904525	704203	WL WPCF-Perimtr Util C	12,457,094			12,457,094					12,457,094
	704204	WL WPCF-Process Supprt	11,220,808			11,220,808					11,220,808
	704205	WL-Design of Headworks	43,885,844					43,885,844			43,885,844
	704206	Rvr Rd Wet Wthr Trtmt	35,240,263				35,240,263				35,240,263
	705113	WL WPCF Elec Maint/Ops	280			280					280
	705202	Peak Ex Flw Trtmt-Swr	99,999				99,999				99,999
	705203	Interim Solids Facil E	471,750						471,750		471,750
	998650	CIP Management-Sani Sw	2,938,000	2,938,000							2,938,000
		Total	134,780,106	5,296,372	14,103,594	28,135,705	38,972,262	43,885,844	471,750	1,523,187	132,388,714

Table B-5
City of Salem

Existing Debt Service Summary						**Wastewater**	
Bond Issue	Total	Treatment	WWTF	Pump	Collection	**Total**	**Growth**
Available Capacity		12%	13%	27%	14%		
		1%	0%	4%	95%	100%	14.5%
A		*0.35%*	*0.00%*	*2.98%*	*65.32%*	69%	
Interest	$ 2,588,335	$9,070	$0	$77,139	$1,690,616	$1,776,825	
Management	92,782	$325	$0	$2,765	$60,602	$63,692	
		0%	0%	0%	100%	100%	13.9%
B		*0.00%*	*0.00%*	*0.00%*	*42.58%*	43%	
Interest	$ 4,021,430	$0	$0	$0	$1,712,342	$1,712,342	
Management	201,570	$0	$0	$0	$85,829	$85,829	
		17%	0%	36%	47%	100%	18.2%
CD		*7.55%*	*0.00%*	*15.73%*	*20.92%*	44%	
Interest	$7,873,276	$594,744	$0	$1,238,780	$1,647,232	$3,480,756	
Management	753,303	$56,904	$0	$118,525	$157,605	$333,033	
		0%	0%	54%	46%	100%	21.0%
E		*0.00%*	*0.00%*	*24.68%*	*20.62%*	45%	
Interest	$6,352,180	$0	$0	$1,567,900	$1,309,855	$2,877,755	
Management	585,352	$0	$0	$144,482	$120,703	$265,184	
		25%	0%	36%	40%	100%	18.1%
F		*24.94%*	*0.00%*	*35.50%*	*39.55%*	100%	
Interest	$4,808,830	$1,199,496	$0	$1,707,284	$1,902,050	$4,808,830	
Management	494,642	$123,381	$0	$175,613	$195,647	$494,642	
		100%	0%	0%	0%	100%	12.1%
G		*0.00%*	*0.00%*	*0.00%*	*0.00%*	0%	
Interest	$2,872,091	$35	$0	$0	$0	$35	
Management	345,076	$4	$0	$0	$0	$4	
H		*0.00%*	*0.00%*	*0.00%*	*0.00%*	0%	
Interest	$8,762,430	$0	$0	$0	$0	$0	
Management	1,417,515	$0	$0	$0	$0	$0	
		100%	0%	0%	0%	100%	12.1%
I		10.15%	0.00%	0.00%	0.00%	10%	
Interest	$4,211,955	$427,526	$0	$0	$0	$427,526	
Management	408,915	$41,506	$0	$0	$0	$41,506	
Total							
Interest	**$41,490,527**	**$2,230,871**	**$0**	**$4,591,103**	**$8,262,095**	**$15,084,069**	
Management	**$4,299,154**	**$222,121**	**$0**	**$441,384**	**$620,386**	**$1,283,891**	

Table B-6
City of Salem
Summary of Financing Assumptions for Credit Analysis

	Total	2008	2010	2011	2012	2015	2025
Years Inflation (1)		*1*	*3*	*4*	*5*	*8*	*18*
Total Project List Costs (2007$)							
Future Debt Funded (2)	$440,808,032	$114,608,000	$6,240,000	$36,088,000	$102,914,032	$148,852,000	$32,106,000
Cash Funded (3)	$41,300,000						
Total Project List 2007 $	**$482,108,032**						
Future Debt Assumptions							
Total Amount (w/Issuance & Inflation)	$527,733,288	$121,106,392	$6,927,626	$41,066,391	$120,038,950	$186,970,833	$51,623,096
Interest Rate	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%
Term	20	20	20	20	20	20	20
Issuance Cost	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Existing Debt Principal Allocation (4)							
Future Growth	$1,579,294						
Existing	$42,855,706						
Total	$44,435,000						
Growth Cost Summary							
Future Debt Funded 2007 $	$73,162,496	$13,854,880	$561,600	$6,039,280	$14,365,576	$27,446,280	$10,894,880
Growth %	17%	12%	9%	17%	14%	18%	34%
Growth Principal -- Future Debt	$90,885,074	14,640,466	623,486	6,872,407	16,756,011	34,474,873	17,517,829
Cash Funded 2007 $	$34,116,100						
Total Growth Cost 2007$	$107,278,596						
Deficiency Summary							
Future Debt Funded 2007 $	$367,645,536	$100,753,120	$5,678,400	$30,048,720	$88,548,456	$121,405,720	$21,211,120
Deficiency %	83%	88%	91%	83%	86%	82%	66%
Deficiency Principal -- Future Debt	$436,848,214	$106,465,926	$6,304,140	$34,193,984	$103,282,938	$152,495,960	$34,105,266
Cash Funded 2007 $	$7,183,900						
Total Deficiency Cost 2007$	$374,829,436						
Total Allocated Cost 2007$	**$482,108,032**						

(1) Inflation Factor: 2.5%
(2) Includes all projects except distribution and pumping
(3) Distribution and pumping
(4) Based on Table A-5