CITY of LIVERMORE

WASTEWATER, WATER & STORM DRAIN CONNECTION FEE STUDY
For Expansion of
Sanitary Sewer, Water Reclamation Plant, Wastewater Disposal, Potable Water, Recycled Water, & Storm Drain Facilities

March 2010

Craig R. Lawson
Utility Management Consultant

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March 11, 2010

Mr. Joel Waxdeck, P.E.
Project Manager
Water Reclamation Plant
City of Livermore
101 West Jack London Boulevard
Livermore, California 94551-7632

Subject: Wastewater, Water & Storm Drain Connection Fee Study

Dear Mr. Waxdeck:

Pursuant to your request, and in accordance with the authorization of the City of Livermore (City), the comprehensive Wastewater, Water and Storm Drain Connection Fee Studies have been completed and are presented herein. Information from the City's July 2004 Utility Master Plans and updated land use development projections from the adopted 2003-2025 General Plan & Downtown Specific Plan were first incorporated in the August 2004 Fee Study; an update of the wastewater portion of that study was completed on November 29, 2005 after the City's Measure E election providing for wastewater disposal via LAVWMA. The updated 2009 Study presented herein contains revised estimates of costs and scheduling of expansion projects along with revised projections of growth that reflect the slowing of the economy this past year, and the study period was extended to fiscal year 2039/40. All review comments by City staff since the June 23, 2009 submittal have been incorporated herein including their proposal to maintain current fees for fiscal year 2009/10 and phase in needed fee increases over the following four fiscal years. The City's current fees and past studies are described below:

- The City's first comprehensive Wastewater Connection Fee Study was completed by this Consultant in 1990, and new studies were completed in 1996, 1998, 2004 and 2005. The 2005 Study (plus subsequent inflation) is the basis for the City's current wastewater connection fee of $4,534.
- The City's first comprehensive Water Connection Fee Study was completed by this Consultant in 1997, and a new study was completed in 2004. The 2004 Study (plus subsequent inflation) is the basis for the City's current water connection fee of $3,694.
- The City's first comprehensive Storm Drain Fee Study was completed by this Consultant in 2004. The 2004 Study (plus subsequent inflation) is the basis for the City's current storm drain fee of $902.

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Key Study Data

Estimated expansion costs and projected growth expressed on a dwelling unit equivalent (DUE) basis are summarized below since the 2004 Fee Study and through fiscal year 2039/40 exclusive of interest expense on future debt payments:

Service	Wastewater	Water	Storm
Sanitary Sewers	$12.3 M		
Water Reclamation Plant	$33.8 M		
Wastewater Disposal	$28.8 M		
Total Costs	$74.9 M	$35.8 M	$16.5 M
New DUEs (2005/06-39/40)	11,055	12,234	13,294

Summary of Key Study Findings

The results of the alternative connection fee analyses are summarized below on a DUE basis. Note that Phasing Base Fees is a City staff proposal that the proposed Minimum Base Fees be phased in with no increase in fees for fiscal year 2009/10 and then increasing fees by twenty-five percent annually of the proposed Minimum Base Fee until fully implemented for fiscal year 2013/14. The result is a minimal loss of fee revenue as shown in the present value ending fund balances.

Alternative	Wastewater	Water	Storm
Current Fees	$4,534	$3,694	$902
Minimum Base Fees Proposed	$5,275	$3,500	$1,260
Economic Cycling Fees	$5,700	$3,685	$1,340
Economic Cycling & Higher Reserves	$7,170	$4,500	$1,480
Present Value of New Debt Needed, Millions			
Phasing Base Fees	$20.6	$21.5	$5.0
Minimum Base Fees Proposed	$20.6	$21.5	$5.0
Economic Cycling Fees	$24.3	$25.2	$6.8
Economic Cycling & Higher Reserves	$24.3	$25.2	$6.8
Present Value Ending Fund Balance, Millions, FY 2039/40			
Phasing Base Fees	$0.0	$0.5	$0.0
Minimum Base Fees Proposed	$0.3	$0.5	$0.4
Economic Cycling Fees	$0.3	$0.5	$0.5
Economic Cycling & Higher Reserves	$18.7	$12.9	$2.7

Wastewater Connection Fees

The City's current wastewater connection fee is $4,534 for an equivalent single-family residential dwelling unit (DUE) that is defined as having an average wastewater flow of 180 gallons per day (gpd). This fee is based on annual adjustments based on the 20-City Engineering News Record (ENR) Construction Cost Index (CCI) since the City implemented its last comprehensive wastewater connection fee study completed by this Consultant in November 2005. Beginning with implementation of the August 2004 Study, nonresidential users are assessed connection fees based on equivalent single-family residential connection fee unit costs for flow, biochemical oxygen demand (BOD), and suspended solids (SS). The design of this current fee was based in part on disposal expansion via LAVWMA, and the City's fees for several earlier years were double this fee due to being based in part on in-valley disposal expansion. Based on current engineering planning, new 2009 LAVWMA debt service allocations based on actual instead of estimated expansion costs, and on the analyses presented herein, the Minimum Base Fee for next fiscal year 2009/10 is estimated to be $5,275 escalated annually thereafter for inflation.

Water Connection Fees

The City's current water connection fee of $3,694 for a 5/8-inch meter is based on annual adjustments based on the 20-City ENR CCI since the City implemented its last comprehensive water connection fee study completed by this Consultant in August 2004. The new analyses presented herein for potable and recycled water expansion projects and projected growth show a Minimum Base Fee of $3,500 for fiscal year 2009/10 for 5/8-inch meters. It is recommended that the City continue to assess higher connection fees to larger meters based on the maximum continuous flow operation for the meter being installed compared to a 5/8-inch meter's 10 gallons per minute maximum continuous flow rating.

Storm Drain Fees

As with the City's wastewater and water connection fees, the City has an established policy of financing storm drain expansion via a one-time fee assessed with a building permit application. The City's current storm drain fee of $902 for a dwelling unit equivalent is based on 20-City ENR CCI since the City implemented its last comprehensive storm drain fee study completed by this Consultant in August 2004. The new analyses presented herein for storm drain expansion projects and projected growth show a Minimum Base Fee of $1,260 for fiscal year 2009/10. In the case of storm drain expansion, a dwelling unit equivalent is defined as a single-family detached residential unit with an average of 3,470 square-feet of total impervious area or $0.363 per square-foot for all new impervious area including but not limited to curbs, gutters, sidewalks, roadways, and other impervious area within the development as defined by the City's Storm Drain Ordinance. This ordinance is to be revised so that the storm drain fee also provides for development driven creek culvert improvements because Zone 7 is not providing for the cost of creek culvert improvements, and this change has caused a higher increase in the City's storm drain fee than would otherwise have been

needed. As with water, the City's storm drain fee is compatible with the methods used by Zone 7 to assess higher storm drain fees in the City's service area.

Economic Cycling

Economic cycling was a new concept designed by this Consultant beginning a decade ago in 1999 at the request of LAVWMA, DSRSD and Pleasanton in order to minimize the risk of sewer expansion debt to existing ratepayers. Because the LAVWMA expansion project and the Stage 4 DSRSD Treatment Plant expansion could not be phased, nearly all expansion costs occurred before growth provides connection fee revenues. Furthermore, these wastewater expansion costs were, and still are, very large relative to the existing customer base, and particularly for DSRSD. Because revenue bonds must be secured via revenues of existing ratepayers and not connection fees that are uncertain, the inability to phase such large projects and their size relative to the current customer base creates risk to existing sewer ratepayers. Analyses of this Consultant's studies for the past twenty plus years for these agencies found the worst four-year period had DUE sales of 35 percent of the historical rate. Accordingly, economic cycling was designed so that every four years only 35 percent of projected DUE sales were sold, and then the balance of 65 percent were projected to be sold over the following four years along with the projected DUE sales for those following four years. This helped DSRSD and Pleasanton reach agreement for regional sewer connection fee design, which is uniform for both agencies, by adding a significant contingency for when projected DUE sales may not be realized.

City expansion planning showed a similar magnitude of this issue in the August 2004 Study when faced then with sewer expansion planning for in-valley disposal, and to a lesser degree with expansion disposal via LAVWMA and with expansion of water and storm drain services. Given the resources expended on and the attention directed to this issue over several years for Tri-Valley sewer expansion planning, it was then recommended and it is recommended again that the City consider the potential impact of actual DUE sales being less than projected. Accordingly, connection fees are also designed herein for Economic Cycling and the affects of Economic Cycling are higher debt estimates and higher connection fee estimates. The question for the City before issuing new debt will be whether some contingencies should be provided in connection fee design if actual growth is slower or less than growth projections made now. Note that the Economic Cycling alternatives have nearly the same ending present value fund balances as the Minimum Base Fee Designs and hence minimal reserves are provided for with all alternatives.

Minimum & Maximum Reserves

In conjunction with Economic Cycling for regional sewer expansion planning, DSRSD and Pleasanton also agreed to maintaining reserves at a Minimum of two years debt service and increasing the fee until reaching a Maximum of five years debt service. This on top of Economic Cycling was helpful for the parties to reach agreement. It will, however, generate either surplus reserves later and/or lower connection fees later. As with Economic Cycling

modeling, this is a question for the City, to consider before issuing new debt, as to what level of reserves should be held to be able to pay debt service if growth slows without the use of revenue from existing ratepayers.

The obvious problem today is that it's far more troublesome to implement higher fee increases with the slowing economy than back with the August 2004 Study. Economic Cycling fees are twenty percent greater than Minimum Base Fees due to delays in receipt of connection fee revenue that causes both greater debt expense and lower interest income earned on expansion reserves. Some degree of this is accomplished in the design of Minimum Base Fees simply because the City's growth projections have now been lowered significantly in the near-term as compared to the August 2004 Study. Some degree of this can also be accomplished later by scheduling expansion projects further into the future if growth slows further from today's projections. In order to increase reserves to five years of estimated debt service payments, fees would need to be fifty percent higher than Minimum Base Fees, which is certainly too expensive in today's economic climate.

Phasing In Minimum Base Fees

As previously discussed, because of the current economic slowdown, City staff is likely to propose phasing in Minimum Base Fees with no increase in fees next fiscal year 2009/10 and then increasing fees by twenty-five percent annually of the proposed Minimum Base Fee until fully implemented for fiscal year 2013/14. These fees are shown below and on the following page. Note that the Alternate Phasing fee increases are likely to be staff recommendations, and in the case of wastewater, the fee increase would be $185 annually plus ENR CCI 20-cities inflation since the City last increased fees on July 1, 2009 based on an ENR CCI of 8573.87 for May 2009. If the ENR CCI is say 8830.00 for May 2010, the July 1, 2010 fee would be $4,860.00 (($4,534+$185)*8830.00/8573.87).

Wastewater Connection Fees

Fiscal Year	09/10	10/11	11/12	12/13	13/14
Minimum Fee	$5,275	$5,435	$5,600	$5,770	$5,945
Phasing Increase					
Percent Increase	0%	25%	50%	75%	100%
Phasing Fee	$4,534	$4,760	$5,065	$5,460	$5,945
Fee Increase	$0	$226	$305	$395	$485
Current $ Phasing*	$4,534	$4,620	$4,775	$4,995	$5,275
Increase	$0	$86	$155	$220	$280
Alternate Phasing					
Current $ Phasing*	$4,534	$4,720	$4,905	$5,090	$5,275
Increase	$0	$185	$185	$185	$185

Water Connection Fees

Fiscal Year	09/10	10/11	11/12	12/13	13/14
Minimum Fee	$3,500	$3,605	$3,715	$3,825	$3,940
Phasing Increase					
Percent Increase	0%	25%	50%	75%	100%
Phasing Fee	$3,694	$3,670	$3,705	$3,790	$3,940
Fee Increase	$0	-$24	$35	$85	$150
Current $ Phasing	$3,694	$3,565	$3,490	$3,470	$3,500
Increase	$0	-$129	-$75	-$20	$30
Alternate Phasing					
Current $ Phasing*	$3,694	$3,646	$3,597	$3,549	$3,500
Increase	$0	-$49	-$49	-$49	-$49

Storm Drain Fees

Fiscal Year	09/10	10/11	11/12	12/13	13/14
Minimum Fee	$1,260	$1,300	$1,340	$1,380	$1,420
Phasing Increase					
Percent Increase	0%	25%	50%	75%	100%
Phasing Fee	$902	$1,000	$1,120	$1,260	$1,420
Fee Increase	$0	$98	$120	$140	$160
Current $ Phasing	$902	$970	$1,055	$1,155	$1,260
Increase	$0	$68	$85	$100	$105
Alternate Phasing					
Current $ Phasing*	$902	$992	$1,081	$1,171	$1,260
Increase	$0	$89	$89	$89	$89

I appreciate this opportunity to again be of service to the City of Livermore and I am available to discuss my findings with you and other interested parties at your convenience. I also wish to acknowledge the assistance and cooperation of City staff in developing the study presented herein, and especially that provided by you and the financial data and review provided by Ms. Monica Potter in Finance before her recent retirement, and for review and comment provided by Ms. Cheri Sheets and Mr. Mike Cavalieri in Engineering.

Very truly yours,

Craig R. Lawson

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CHAPTER 1

SUMMARY OF WASTEWATER, WATER & STORM DRAIN CONNECTION FEE ANALYSES

Expansion of Sanitary Sewer, Water Reclamation Plant, Wastewater Disposal, Potable Water, Recycled Water & Storm Drain Services

In accordance with the request and authorization of the City of Livermore (City), a study of fees assessed new applicants for wastewater, water and storm drain services has been prepared. This study is an update of previous studies designed by this Consultant with the last wastewater fee expansion study completed in November 2005, and the last water and storm drain expansion fee studies completed in August 2004. This study is based on the City's current budget and Capital Improvement Program (CIP) budget planning, and information and revisions thereto from the City's July 2004 Utility Master Plans and updated land use development projections from the adopted 2003-2025 General Plan & Downtown Specific Plan. This study is also based on estimates of interest income earned on reserves, expenses of future debt financing, anticipated increases in construction costs, growth in wastewater, water and storm drain use, and fees assessed by other similar utilities. The wastewater, water and storm drain fees developed in this study, which are recommended for adoption, are based on cost of service philosophy and are designed to recover anticipated costs of future wastewater, water and storm drain expansion for the City's services.

Wastewater Connection Fees

With the approval of Measure E on November 8, 2005 for the City to participate in disposal expansion via LAVWMA instead of in-valley disposal alternatives, the November 2005 Study completed by this Consultant resulted in the City lowering its connection fee of $8,900 to $4,000 which with escalation for inflation since then yields the City's current connection fee of $4,534. The City's wastewater connection fees had been twice the current level for a nearly seven years. However, as shown below, disposal expansion via LAVWMA is only one-third of the in-valley disposal expansion cost estimates.

Wastewater Service	In-Valley Disposal, August 2004 Study	Disposal via LAVWMA, November 2005
Sanitary Sewers	$10.0 M	$9.3 M
Water Reclamation Plant	$15.0 M	$23.0 M
Wastewater Disposal	$68.3 M	$22.0 M
Total Costs	$93.3 M	$54.3 M

The results of the 2010 wastewater connection fee analyses are summarized below:

- The City's first comprehensive wastewater connection fee study was completed by this Consultant in July 1990, and an update was last completed in November 2005. The 2010 study presented herein contains new expansion cost estimates for sanitary sewers, the City's Water Reclamation Plant (WRP) and disposal facilities, new growth projections with a flow of 180 gallons per day (gpd) assigned to equivalent single-family dwelling units (DUEs), March 2001 LAVWMA Revenue Bond debt service that is now being reconciled between planning estimates and actual project costs, and new estimates of inflation, interest income, reserves, and bonds through fiscal year 2039/40.
- The City's existing WRP and disposal facilities but exclusive of sanitary sewers has an estimated historical cost of $76 million, an estimated current replacement cost of $148 million, and an estimated current value of $100 million.
- On a per dwelling unit equivalent (DUE) basis of 180 gallons per day (gpd), estimates presented herein for the City's existing treatment and disposal facilities are $1,610 per DUE for historical costs, $3,140/DUE for current replacement costs, and $2,120/DUE for current value.
- Inclusive of sanitary sewers, estimated expansion costs including expenditures since the 2004 Study are shown below:

Wastewater Service	2010 Study
Sanitary Sewers	$12.3 M
Water Reclamation Plant	$33.8 M
Wastewater Disposal	$28.8 M
Total Costs	$74.9 M

- Residential growth is estimated to be 53 percent of growth, and near-term growth is projected to slow considerably for the next four years in addition to this current fiscal year. Thereafter, growth is projected to average just under 0.9 percent annually as compared to historical growth of 3.0 percent since the first wastewater connection fee was conducted in 1990.
- The projected ultimate ADWF capacity is 9.472-mgd or the same as for the 2005 Study, as compared to 10.6-mgd in the 1998 Study and a LAVWMA influent limitation of 11.1-mgd for the City of Livermore.
- Average costs of system expansion calculated under the marginal cost pricing method range from $3,140 for existing facilities exclusive of outstanding debt to $3,710 for the City's proposed facilities and outstanding LAVWMA debt principal. New capacity unit costs are, therefore, greater than historical costs.
- Inclusive of outstanding debt service payments, incremental costs and growth for fiscal years 2009/10 through 2039/40 are estimated to be $65 million and 9,765 DUEs, respectively. These data yield an estimated incremental unit cost of $6,670/DUE exclusive of new debt service expenses and administrative costs. This unit cost is less than the average of incremental costs of new design capacity of

$8,490 because there is still capacity available to fund a portion of new incremental costs with the next major WRP projects not anticipated until fiscal years 2011/12 and 2014/15.

- Connection fees for thirty-five northern California communities shown herein vary significantly and ranged from $780 to $22,186 as compared to the City's fiscal year 2007/08 connection fee of $4,199 and its current connection fee of $4,534; the average of these fees was $5,817. The connection fees of 784 California communities ranged from nothing to $22,305 and averaged $3,870.

- A Minimum Base Fee cash flow analysis through fiscal year 2039/40 shows that a fiscal year 2009/10 connection fee increase from $4,329 to $5,275 escalated annually thereafter for inflation will fund estimated expansion costs for sanitary sewers, the WRP, and LAVWMA expansion debt service. There are many assumptions in this analysis including 180 gpd/DUE as compared to 220 gpd/DUE in studies prior to the 2004 Study.

- Due to the current economic slow down, City staff requested an analysis that maintains current fees over next fiscal year 2009/10 and then phases in the Proposed Minimum Base Fees over the following four fiscal years at twenty-five percent per year of the minimum increased needed. Note that the Alternate Phasing fee increases shown below are likely to be staff recommendations, and in the case of wastewater, the fee increase would be $185 annually plus ENR CCI 20-cities inflation since the City last increased fees on July 1, 2009 based on an ENR CCI of 8573.87 for May 2009. If the ENR CCI is say 8830.00 for May 2010, the July 1, 2010 fee would be $4,860.00 (($4,534+$185)*8830.00/8573.87).

Wastewater Connection Fees

Fiscal Year	09/10	10/11	11/12	12/13	13/14
Minimum Fee	$5,275	$5,435	$5,600	$5,770	$5,945
Phasing Increase					
Percent Increase	0%	25%	50%	75%	100%
Phasing Fee	$4,534	$4,760	$5,065	$5,460	$5,945
Fee Increase	$0	$226	$305	$395	$485
Current $ Phasing*	$4,534	$4,620	$4,775	$4,995	$5,275
Increase	$0	$86	$155	$220	$280
Alternate Phasing					
Current $ Phasing*	$4,534	$4,720	$4,905	$5,090	$5,275
Increase	$0	$185	$185	$185	$185

- Economic cycling can be designed to help minimize risk to existing ratepayers of securing debt needed for expansion. Economic cycling so that every four years only 35 percent of projected DUE sales are sold, and then the balance of 65 percent are projected to be sold over the following four years along with the projected DUE sales for those following four years causes higher debt and higher connection fees. Risk is further reduced by setting reserves at a minimum of two years debt service and increasing fees until reserves equal a maximum of five

years debt service. Note that this is a question for the City as to what level of reserves should be held to be able to pay debt service if growth slows without the use of revenue from existing ratepayers.

- The results of the alternative connection fee analyses are summarized below:

Alternative	2005 Study	2010 Study
Current Fee	$8,900	$4,534
Minimum Base Fee	$4,000	$5,275
Economic Cycling Fee	$4,500	$5,700
Economic Cycling & Higher Reserves	$5,300	$7,170
Present Value of New Debt Needed		
Minimum Base Fee	$22.5M	$20.6
Economic Cycling Fee	$26.2M	$24.3
Economic Cycling & Higher Reserves	$26.2M	$24.3
Present Value Ending Fund Balance, FY 2039/40		
Minimum Base Fee	$1.9 M	$0.3
Economic Cycling Fee	$1.8 M	$0.3
Economic Cycling & Higher Reserves	$14.4M	$18.7

- The 2005 Study Minimum Base Fee included $8.9 million of funding for incentives for wastewater irrigation projects. This was added to the fee structure per City Council direction at the December 12, 2005 Council Meeting. This 2010 Study no longer includes funding for wastewater irrigation projects. This funding is now included in water connection fee design because revenue from revenue from recycled irrigation connection fees are deposited in this program.

- Future cost estimates for expansion are allocable 17.96 percent to the City's collection system (or sanitary sewer facilities), 48.81 percent to the City's Water Reclamation Plant (WRP), and 33.23 percent to disposal expansion. Accordingly, the Minimum Base Fee of $5,275 is allocable $948.00 to Collection, $2,575.00 to the WRP, and $1,752.00 to Disposal. There has been a shift of fee cost allocations to treatment (i.e., the WRP) since the 2005 Study. In the 2005 Study, future cost estimates for expansion were allocable 10.64 percent to the City's collection system, 16.19 percent to the City's WRP, and 73.17 percent to In-Valley Disposal expansion. This was because the costs of In-Valley disposal expansion were far greater than disposal expansion via LAVWMA which was implemented by the City after the Measure Election of November 2005.

Water Connection Fees

The City's current water connection fee of $3,694 for a 5/8-inch meter is based on escalation since the City implemented the comprehensive water connection fee study completed by this Consultant in August 2004. The study presented herein finds that the City

of Livermore could decrease its connection fee for 5/8-inch meters from $3,694 to $3,500 though a fee decrease is not recommended at this time. It is recommended that the City continue to assess higher connection fees to larger meters based on the maximum continuous flow operation for the meter being installed compared to a 5/8-inch meter's 10 gallons per minute maximum continuous flow rating. The City began this policy via implementation of this Consultant's May 1997 Study. Study findings of 2010 are summarized below:

- The incremental cost for potable and recycled water expansion is estimated herein to be $27.5 million exclusive of debt service expenses, as compared to $31.3 million estimated in the August 2004 Study and $40.3 million estimated in the May 1997 Study that contained higher growth projections.
- The incremental cost exclusive of costs from prior years is estimated to be $27,516,000 for connection fee design for 11,771 DUEs, as compared to August 2004 Study costs of $31,340,000 for connection fee design for 12,087DUEs and to May 1997 costs of $40,300,000 and DUEs of 21,787.
- These data show an estimated incremental cost of $2,338/DUE exclusive of debt service expenses as compared to the City's current average water connection fee of $3,694/DUE, the August 2004 estimate of $2,593/DUE, and May 1997 Study estimate of $1,850/DUE.
- Ultimate design growth per master planning is estimated to be 14.207 mgd, including 11.0500 mgd of potable water demand and 2.9707 mgd of recycled water demand. Flows of 414 gpd continue to be assigned to a 5/8-inch meter which is termed a dwelling unit equivalent (DUE). Near-term growth projections are lower than prior studies due to the current economic slowdown and increase after five years beginning in fiscal year 2014/15. Projected potable water growth is 8,739 DUEs, and projected recycled water growth is 3,032 DUEs.
- The Minimum Base Fee analysis presented herein contains a fiscal year 2009/10 connection fee decrease from $3,699 to $3,500 escalated annually thereafter for inflation through fiscal year 2039/40. This analysis also assumes new debt financings of $21.5 million in addition to outstanding debt service payments totaling $7.3 million.
- An analysis that maintains the current fee over next fiscal year 2009/10 and then phases in the Proposed Minimum Base Fee over the following four fiscal years at twenty-five percent per year of the minimum increased needed is shown on the following page. Both alternatives have an ending present value of $0.5 million because the minimum and current fees are nearly the same.

Fiscal Year	09/10	10/11	11/12	12/13	13/14
Minimum Fee	$3,500	$3,605	$3,715	$3,825	$3,940
Phasing Increase					
Percent Increase	0%	25%	50%	75%	100%
Phasing Fee	$3,694	$3,670	$3,705	$3,790	$3,940
Fee Increase	$0	-$24	$35	$85	$150
Current $ Phasing	$3,694	$3,565	$3,490	$3,470	$3,500
Increase	$0	-$129	-$75	-$20	$30
Alternate Phasing					
Current $ Phasing*	$3,694	$3,646	$3,597	$3,549	$3,500
Increase	$0	-$49	-$49	-$49	-$49

- The Minimum Base water connection fee of $3,500 increases with Economic Cycling to $3,685, for an increase of $185. Furthermore, estimated new debt financing increases from a present value of $21.5 million to $25.2 million due to delays in the receipt of connection fee revenue. Note that the Minimum Base Fee and Economic Cycling alternatives have the same ending present value fund balances at $0.5 million.
- The Economic Cycling fee increases to $4,500 with Minimum & Maximum Reserves, as compared to the Minimum Base Fee of $3,500 and $3,685 with Economic Cycling. This is a significant increase of $1,000 over the Minimum Base Fee or 29 percent as compared to 36 percent for wastewater expansion.
- Connection fees for 12 service areas near the City of Livermore range from $5,064 in the City of Fairfield to $29,877 for the Dougherty Valley.
- The average connection fee exclusive of the low fee for the City of Oakland increased from $1,446 in 1983 to $17,064 today, which is an average annual increase of 10 percent over these twenty-six years. During this same period, the City's connection fee inclusive of the Zone 7 Water Agency's connection fee increased from $1,372 to $25,244 that is an average annual increase of 12 percent over twenty-six years. The connection fee of $3,500 proposed for the City exclusive of the Zone 7 fees is an average annual increase of 8 percent over these twenty-six years which is significantly less than the other water utilities.
- The water connection fee proposed for the City of Livermore inclusive of the Zone 7 water connection fee of $25,050 for the Minimum Base Fee and $25,000 for Phasing are both less than EBMUD's water connection fee of $24,990 for the San Ramon Valley and DSRSD and Zone 7's fees of $28,129 for Dublin and $29,877 for the Dougherty Valley. The water connection fee proposed for the City of Livermore inclusive of the Zone 7 water connection fee is greater than Contra Costa Water District's water connection fee of $20,090. Water connection fees are less for water service in Alameda County Water District, Antioch, Fairfield, Martinez, and Pittsburg. It is important to note, however, that it is difficult to make direct comparisons of fees assessed by different agencies because of differences in developer contributions, source of supply, and service area characteristics. It is particularly difficult to identify the proportion of expansion facilities contributed by developers in other agencies. It is also important to note that these other agencies will likely increase connection fees over the next year.

Storm Drain Fees

As with the City's wastewater and water connection fees, the City has an established policy of financing storm drain expansion via a one-time fee assessed with a building permit application. The City's current storm drain fee of $902 for a dwelling unit equivalent (DUE) is based on 20-City ENR CCI inflation since the City implemented its last comprehensive storm drain fee study completed by this Consultant in August 2004. This fee is for all new impervious area including but not limited to curbs, gutters, sidewalks, roadways, and other impervious area within the development as defined by the City's Storm Drain Ordinance. This ordinance is to be revised so that the storm drain fee also provides for development driven creek culvert improvements because Zone 7 is not providing for the costs of creek culvert improvements. New storm drain fee analyses presented herein are summarized below:

- The cost of storm drain projects allocable to expansion is $16,547,700 through fiscal year 2039/40 exclusive of any debt service expenses. Of these costs, $3.9 million has already been expended which leaves $12.4 million yet to be constructed.
- Storm drain growth projections are based on future increases of impervious areas that total 1,059 acres, including 561 acres of residential development and 498 acres of nonresidential development for fiscal years 2004/05 through 2039/40. As with wastewater and water growth projections, near-term storm drain growth has been lowered due to the current economic climate. Average single-family use of 3,470 square-feet of new impervious area is used to define dwelling unit equivalents (DUEs). Projected storm drain growth totals 13,294 DUEs beginning with fiscal year 2004/05 when this type of study was first conducted.
- The yet to be constructed cost of $12,623,000 is greater than the August 2004 Study estimate of $12,036,000 partly due to inflation but mostly due to the addition of development driven creek culvert improvements because Zone 7 is not providing for the costs of creek culvert improvements.
- These data show an estimated incremental cost of $1,240/DUE as compared to the August 2004 Study estimate of $647/DUE and the current storm drain fee of $868/DUE. These incremental cost estimates are exclusive of debt service expenses that are needed due to early projects occurring before some of the growth to be served.
- The Minimum Base Fee thirty-year cash flow analysis shows a fiscal year 2009/10 connection fee increase from $902 to $1,260 escalated annually thereafter for inflation through fiscal year 2039/40 will fund estimated storm drain expansion costs including new debt financings of $5.0 million.
- Maintaining the current storm drain fee of $902 over next fiscal year 2009/10 and then phasing in the Proposed Minimum Base Fee over the following four fiscal years at twenty-five percent per year of the minimum increase needed is shown on the following page. The affect is an ending present value of zero instead of a positive ending fund balance of $0.4 million or a loss of revenues of $0.4 million.

Fiscal Year	09/10	10/11	11/12	12/13	13/14
Minimum Fee	$1,260	$1,300	$1,340	$1,380	$1,420
Phasing Increase					
Percent Increase	0%	25%	50%	75%	100%
Phasing Fee	$902	$1,000	$1,120	$1,260	$1,420
Fee Increase	$0	$98	$120	$140	$160
Current $ Phasing	$902	$970	$1,055	$1,155	$1,260
Increase	$0	$68	$85	$100	$105
Alternate Phasing					
Current $ Phasing*	$902	$992	$1,081	$1,171	$1,260
Increase	$0	$89	$89	$89	$89

- The Minimum Base storm drain fee of $1,260 increases to $1,340 with Economic Cycling, for an increase of 6 percent. Both fees have nearly the same ending present value fund balances of $0.4 million and $0.5 million, respectively, and hence minimal reserves are provided for by both alternatives.
- The Economic Cycling fee of $1,340 increases to $1,480 with Minimum and Maximum Reserves, as compared to the Minimum Base Fee of $1,260. This is a significant increase of $220 over the Minimum Base Fee or 17 percent. Though this increase is not nearly as significant as for wastewater connection fee design at 36 percent, it is still a significant fee increase. Again, note that this is a question for the City as to what level of reserves should be held to be able to pay debt service if growth slows without the use of other City revenue and currently there is no other revenue related to storm drains.

Abbreviations and Symbols Used in the Report

ADWF	Average dry-weather flow
BOD	Biochemical oxygen demand
CIP	Capital improvement program
Ccf	Hundred cubic feet
City	City of Livermore
District or DSRSD	Dublin San Ramon Services District
DUE	Dwelling Unit Equivalent
EBDA	East Bay Dischargers Authority
FY	Fiscal year
I/I	Infiltration/inflow
Gpcd	Gallons per capita per day
Gpd	Gallons per day
LAVWMA	Livermore-Amador Valley Water Management Agency
Lb	Pound (s)
Mg	Millions of gallons
Mgd	Millions of gallons per day
Mg/l	Milligrams per liter

M lb	Thousand pounds
Recycled Water System Master Plan	Dodson Engineers, July 2004
Sewer Master Plan	Brown & Caldwell, July 2004
SS	Suspended solids
Storm Drain Master Plan	Schaaf & Wheeler, July 2004
SWRCB	State Water Resources Control Board
USEPA	U.S. Environmental Protection Agency
Water Master Plan	Brown & Caldwell July 2004
WRP	The City's Water Reclamation Plant
Zone 7	The Zone 7 Water Agency

CHAPTER 2

WASTEWATER CONNECTION FEE ANALYSES

The City of Livermore (City) has an established policy of financing wastewater system expansion via a one-time charge assessed new system users at the time they connect to the wastewater system. This policy was implemented in the mid-1970's or earlier and the wastewater connection fee was until mid-1990 adjusted annually based on changes in the well-known 20-City Engineering News Record Construction Cost Index (ENR CCI).

History of City's Wastewater Connection Fees

In early 1990, the City engaged this Consultant to develop a comprehensive wastewater connection fee study that was completed in July 1990 and implemented shortly thereafter. The July 1990 Study contains connection fee analyses of a number of expansion alternatives and a number of alternative methods of connection fee development. The original July 1990 Study was subsequently updated in June 1992 by this Consultant with the most significant change being the incorporation of then new costs for collection system expansion. The June 1992 Study was updated in May 1994 with incorporation of revised projections of expansion costs, lowering the ultimate design capacity from 18-mgd to 11.328-mgd, and extension of the computer model by ten years to thirty years for better cash flow analyses. The May 1994 Study was updated in July 1996 with incorporation of then current LAVWMA planning with design still at 11.328-mgd ADWF and also incorporation of the R. O. Pilot Plant costs and financing. This study was later updated in July 1998 along with a further expansion of the analyses with particular emphasis on the City's participation in the then current expansion planning by the Livermore-Amador Valley Water Management Agency (LAVWMA) and extension of the cash flow analysis model ten years further into the future. In the July 1998 Study, the forty-year computer model incorporated the City's new design and LAVWMA influent limitation of 11.100-mgd ADWF, the City's 1995 and 1998 Sewer Master Plans, the City's new Capital Improvement Program Budget, and May and June 1998 engineering and financial analyses done by LAVWMA for export expansion and the more expensive in-valley disposal alternatives.

Prior to the August 2004 Study, the City's wastewater connection fee was $9,850 for an equivalent single-family residential dwelling unit, and the design was based in part on in-valley disposal expansion. City connection permits were based in part on an equivalent single-family residential flow of 220 gallons per day (gpd). It was recommended, but not implemented until late 2004, that nonresidential users be assessed connection fees based on the equivalent single-family residential connection fee unit costs for flow, biochemical oxygen demand (BOD), and suspended solids (SS). Design criteria for the water reclamation plant used to be 280 gpd with BOD and SS concentrations of 250 milligrams per liter (mg/l), respectively, for an equivalent single-family residential dwelling unit. Planning for July 1998 was based on 220 gpd, and in the 1998 Study BOD and SS domestic-strength concentrations were assumed to be 200 mg/l.

The City lowered its wastewater connection fee to $8,900 for an equivalent single-family residential dwelling unit based in part on in-valley disposal expansion as presented in this Consultant's August 2004 Study. The City then began basing connection permits on an equivalent single-family residential flow of 180 gallons per day (gpd) instead of 220 gpd used previously, and the City began assessing nonresidential users connection fees based on equivalent single-family residential connection fee unit costs for flow, biochemical oxygen demand (BOD), and suspended solids (SS) instead of an outdated fixture unit basis used previously. BOD and SS loadings were set at 0.428 pounds per day (ppd) for both BOD and SS for each DUE based on estimated single-family residential loadings at the WRP found in this Consultant's April 2004 User Charge Study.

With the approval of Measure E on November 8, 2005 for the City to participate in disposal expansion via LAVWMA instead of in-valley disposal, the November 2005 Study completed by this Consultant resulted in the City lowering its connection fee of $8,900 to $4,000 which with escalation for inflation since then yields the City's current connection fee of $4,534. The reasons for today's far lower connection fee are obvious in the table below from the November 2005 Study with disposal expansion costs at one-third due to LAVWMA:

Wastewater Service	**In-Valley Disposal, August 2004 Study**	**Disposal via LAVWMA, November 2005**
Sanitary Sewers	$10.0 M	$9.3 M
Water Reclamation Plant	$15.0 M	$23.0 M
Wastewater Disposal	$68.3 M	$22.0 M
Total Costs	$93.3 M	$54.3 M

The City's pay-as-you-go financing policy for wastewater expansion has been very successful. Upon completion of the Stage 1 reverse osmosis pilot plant and the Phase 5 expansion, the City had successfully financed project costs of $76 million since 1958 with about half debt financing and half cash financing. Debt was issued for the Phase 5 project and the Stage 1 R. O. project due to the uncertainty of disposal expansion planning and hence the desire to retain reasonable cash reserves. Also, the City's outstanding financing is a very favorable low interest SWRCB loan, and another financing was paid off shortly after the July 1998 Study. Furthermore, the City has accrued reserves of $26 million for further expansion. Connection fee receipts, together with federal and state grants in the late 1970's, had enabled the City to successfully fund wastewater expansion projects without issuing debt.

The City's pay-as-you-go financing policy has allowed the City to grow without an adverse affect on existing City wastewater customers. Because debt service requirements generally approximate 25 percent of annual revenue requirements for wastewater utilities, the benefits of the City's financing policy to existing City customers have been significant with just 8 percent of user charges allocable to debt service. In addition, all customers have derived cost savings from the economies of scale of operating a larger wastewater management system.

Since the City's Phase 1 facilities were constructed in 1958, construction costs have increased by 1,270 percent. In addition, it is unlikely that federal or state grants will be available to finance future City growth. Finally, because of the unusual wastewater disposal problems of the Livermore-Amador Valley, wastewater expansion did become significantly more expensive in recent years. Accordingly, it has become necessary to periodically re-evaluate City connection fees with regard to their ability to meet future expansion requirements. Accordingly, the City elected to undertake the study presented herein and so engaged this Consultant.

Connection Fees - A General Overview

Connection fees are traditionally assessed new system users to recover the cost of excess system capacity constructed for their eventual use. There is no single, established method for the determination of a connection fee that is either appropriate for all situations or eminently fair to all new applicants for service. There are, however, several methods currently employed, some to a greater or lesser extent than others, by wastewater utilities. These methods can be categorized as follows:

1. **System Buy-In.** Connection fees are designed to derive the average investment per connection. This method is employed using either historical (actual) costs or current value. It suffers from the fact that it is based on the net cost of utility assets (assets already paid for) and not the incremental costs associated with serving new service connections.
2. **Marginal Cost-Pricing.** Connection fees are designed to derive the incremental cost of system expansion. This method is based on the sound economic principal that new applicants for service should be responsible for only those incremental costs that they cause to be incurred.
3. **Value-of-Service.** Connection fees are based on the practices of other wastewater utilities tempered by the ability of new users to pay. This method is probably the most frequently employed method of developing connection fees for wastewater utilities.

Revenues derived from connection fees can be used to accomplish any of the following objectives:

1. To pay the annual capital costs of future capacity.
2. To provide rate relief to existing system users by paying annual existing and future capacity capital costs, including debt service requirements and depreciable assets purchased from current revenues.
3. To accumulate reserves to finance system improvements and expansions.

It is important to note that state and federal grant program regulations require that grantees recover all operation and maintenance costs via user charges assessed existing system users which are proportional to the cost of service provided. Connection fee receipts cannot, therefore, be used to offset operation and maintenance costs including replacements. Connection fee receipts can be used to offset part or all capital costs. However, if capital

costs allocable to existing system users are funded via connection receipts, state regulations require the grantee to go through a public notification procedure which identifies the subsidies and costs to the various types of existing and future system users.

Discussion of Asset Valuation Methods

To utilize both the system buy-in and marginal cost-pricing methods of determining connection fees, it is first necessary to estimate the value of the City's wastewater treatment and disposal facilities as of January 2010, the midpoint of current fiscal year 2009/10. The term value as used in economic, business, and legal contexts has a variety of meanings. Accordingly, several approaches to establish value are utilized. Most, however, fall within three major categories: those related to actual or imputed market prices, those based on the capitalization of earnings concept, and those that stress asset value. The objective of the valuation is to indemnify the owner. Because certain elements regarding profit motive and general facility marketability are absent in public utility operations; and, because the major portion of the total investment is represented by physical plant, the asset approach to public utility valuation has been found to be the most meaningful and worthwhile. There are two principal methods to value a utility using the asset approach. These are actual cost less depreciation (AC_LD) and reproduction cost new less depreciation (RCN_LD).

Actual Cost Less Depreciation. The principal advantages of the AC_LD method lie in its simplicity and stability. If the utility utilizes the uniform system of accounts, the necessary cost data are readily available to enable rapid and definite cost determinations. In addition, the recorded costs of tangible property are held constant thus providing stability.

The major criticism levied against actual cost valuations pertains to their disregard of changes in the value of money over time. As evidenced by economic history, prices have tended to increase rather than to remain constant. Because the value of money varies inversely with changes in price, monetary values have exhibited a definite decline; a fact not recognized by the AC_LD approach. This situation causes further problems when it is realized that most utility systems are assembled on a piecemeal basis as demanded by service area growth. Consequently, each property addition was paid for with dollars of different purchasing power. When these outlays are summed to obtain a plant value the result can be seriously misleading. Thus, the AC_LD approach fails to satisfy perfectly its principal purpose, which is to determine a meaningful cost of tangible capital plant.

Reproduction Cost New Less Depreciation. A more commonly used method for utility valuation is reproduction cost new less depreciation (RCN_LD). The RCN_LD represents the cost of duplicating the existing wastewater treatment plant (or duplication its function) at current prices, less depreciation. Unlike the AC_LD approach, the RCN_LD method recognizes price level changes that may have occurred since plant construction.

The most accurate RCN_LD valuations involve a physical inventory and appraisal of plant components in terms of their reproduction costs at the time of valuation. However, when accurate cost records are available, the RCN_LD plant value can most easily be ascertained by trending historical costs. This approach employs various construction cost

indices to express actual costs experienced by the utility in terms of current dollars. Once the reproduction cost new has been determined, the remaining life as a percentage of the total life is computed and is used as a factor to multiply reproduction cost new to determine value.

The obvious advantage of the RCN_LD approach is that it gives full consideration to changes in the value of money over time. However, the RCN_LD method is criticized because several assumptions must be made regarding price changes. In addition, if the approach is to be strictly followed, i.e., be physically appraised, it will tend to be time-consuming, expensive, and probably out of date when completed. Finally, critics maintain that the RCN_LD method measures the cost of duplicating a partially obsolete plant that, because of past mistakes and technological advances, would not be reconstructed in exactly the same manner. These critics claim that a detailed study must be performed to reproduce the facility's function at lowest present -day cost. This criticism, however, applies to any valuation method that deals with costs of existing facilities.

Depreciation. Valuations are materially affected by the method of depreciation employed to establish current plant value. Depreciation rates are established to take into account the anticipated losses caused by wear and tear, decay, inadequacy, and obsolescence. These rates, then, are a function of time and durability.

Three principal concepts are practiced in depreciation accounting. These include straight-line, accelerated, and deferred methods. Straight-line depreciation writes off the depreciable base in equal, uniform installments. Accelerated depreciation, which includes the declining balance and sum-of-the-years' digits depreciation methods, is based on the assumption that plant assets lose their worth more rapidly during the initial years of operation. The final concept, deferred depreciation, is the opposite of accelerated depreciation. Under this method, depreciation expense is charged at an ever-increasing amount throughout the asset life.

Recommended Valuation Method for Wastewater Management Facilities

The advantages and disadvantages of each valuation method for the City's wastewater treatment and disposal systems are discussed in the following subsections to provide a basis for the selection of the most appropriate valuation method.

RCN_LD Versus AC_LD. Simplicity and stability are the major advantages of the actual cost valuations (AC_LD). Nevertheless, this method is considered unacceptable during periods of price instability because no consideration is given to changes in the value of the dollar over time. Between 1958, the year in which the Phase 1 treatment facilities were constructed, and January 2010, the prices of identical facilities will have increased by 1,270 percent. Use of the AC_LD method would, therefore, result in a substantial system under valuation.

The major disadvantage of the AC_LD valuation approach is overcome by the reproduction cost new (RCN_LD) valuation approach because price level changes are fully recognized. Although the most accurate RCN_LD valuation would employ a detailed physical inventory and costing of facilities, the scope of this study does not include a detailed plant

valuation. Not only would such a study be time consuming and expensive, it is considered unnecessary for the intended use of the results. Therefore, the trended historical costs of the wastewater management facilities are updated by an appropriate cost index to state plant value in terms of current cost. This method is almost universally used when detailed inventories are not performed and has been found to be quite accurate. By utilizing historical cost data, many costing assumptions that would otherwise be required are avoided.

Depreciation. The only justification for accelerated depreciation accounting for utilities is to defer taxes, if applicable, and to reduce the need for short-term capital. Deferred depreciation would generally be used only if a utility has substantial built-in reserve capacity. Because the City is not profit-oriented nor do they provide for extraordinary levels of unused capacity, both accelerated and deferred depreciation methods would, therefore, be inappropriate for valuation purposes. Accordingly, the straight-line depreciation method, an almost universally accepted approach in utility accounting, will be used in this report. Government Accounting, Auditing and Financial Reporting (GAAFR) guidelines, accountancy standards for municipal government, recognize straight-line methods for use by enterprise funds.

Cost Trending. To utilize the RCN_LD trended historical cost approach, cost data must be updated to reflect changes in the value of money over time. As previously discussed, a detailed physical inventory and costing of facilities is unavailable, and its preparation is beyond the scope and purpose of this study. However, the historical cost of each successive stage is known and this cost can be updated to reproduction cost new by use of a general purpose trending index. The index used in this study is the well-known Engineering News Record (ENR) construction cost index for the San Francisco metropolitan area.

Recommended Valuation Method. The reproduction cost new less depreciation (RCN_LD) trended historical cost approach combined with straight-line depreciation and the ENR construction cost index are used in this study to determine the current replacement value of the City's wastewater treatment and disposal facilities. As discussed in the previous subsections, this method is considered to be the most appropriate valuation method for the City.

Valuation of the City's Wastewater Management Facilities

To determine the January 2010 value of the City's wastewater treatment and disposal facilities, it is first necessary to determine the historical cost of each facility. The historical cost of each facility is then escalated by the appropriate ENR construction cost index and adjusted for depreciation. The resulting value represents the January 2010 value of City treatment and disposal wastewater management facilities. An estimate of the January 2010 value of the City wastewater treatment and disposal management facilities is presented in Table 1.

Historical Treatment & Disposal Costs. As shown in Table 1, the total historical cost of the City's wastewater treatment and disposal facilities is $76,144,000. Details of this historical cost are summarized below:

Table 1. Valuation of Existing City of Livermore Wastewater Facilities at 8.5-mgd as of January 2010

Description	Historical Costs			Escalated Cost		Current Value		
	Amount, $1,000	Midpoint Construction	ENR Index	ENR Ratio	Amount, $1000	Depreciation Years	Depreciation Factor	Amount, $1000
Livermore's Water Reclamation Plant								
Original construction								
Phase 1		1958	765	12.71	$0	30	0.00	$0
Phase 2								
Phase 3								
Phase 4		1982	4739	2.05	$0	30	0.07	$0
Subtotal, Phases 1 - 4	$17,580	1980	3905	2.49	$56,106	30	0.00	$0
Recent Phase 5, R. O. Pilot & Other								
Phase 5	$20,000	1994	6350	1.53	$30,612	30	0.47	$14,286
Stage 1, R. O. Pilot & other thru 1997	$8,787	1997	6740	1.44	$12,671	30	0.57	$7,180
Other 1998/99 - 2007/08	$14,915	2005	8282	1.17	$17,504	30	0.83	$14,586
Subtotal, Phase 5 and Stage 1	$43,702				$60,788			$36,053
Replacement & operating reserves 6/30/08	N/A				N/A			$30,092
Total, Water Reclamation Plant	$61,282				$116,893			$66,144
Livermore's share of Livermore-Amador Valley Water Management Facilities								
Original LAVWMA 15.62-mgd facilities								
LAVWMA	$7,271	1980	3905	2.49	$18,097	50	0.40	$7,239
East Bay Dischargers Authority	$1,364	1980	3905	2.49	$3,396	50	0.40	$1,358
Subtotal, LAVWMA original facilities	$8,635				$21,493			$8,597
Completed LAVWMA expansions								
1-mgd expansion	$602	1983	5140	1.89	$1,138	50	0.46	$524
4.38-mgd expansion	$2,157	1986	5155	1.89	$4,067	50	0.52	$2,115
Subtotal, completed LAVWMA expansions	$2,759				$5,205			$2,638
Disposal expansion planning								
Prior TWA planning	$1,036	1987	5400	1.80	$1,865	50	0.54	$1,007
LAVWMA planning not reimbursed	$0	1997	6740	1.44	$0	50	0.74	$0
Since 1997/98 - 2004/05	$614	2003	7797	1.25	$766	30	0.77	$587
Subtotal, disposal expansion planning	$1,651	2004			$2,631			$1,594
2001-09 Expansion: Principal Paid Thru 1-01-09	$1,817	2004	8228	1.18	$2,147	44	0.86	$1,856
All Livermore's LAVWMA Reserves - 01/27/09					N/A			$19,107
Total, wastewater disposal facilities	$14,862				$31,476			$33,792
Total, existing wastewater facilities	$76,144				$148,369			$99,936

Valuation is for January 2010, the midpoint of fiscal year 2009/10. The ENR CCI is estimated to be 9719.42 based on a November 2009 ENR CCI of 9719.42 for the San Francisco Bay.

*LAVWMA principal paid and estimated useful life are from audit of June 30, 2009. Revised 12-Feb-10

Facility	Midpoint of Construction	Historical Cost, dollars
Phases 1- 4	1958 – 82	17,580,000
Phase 5	1994	20,000,000
Stage 1 R. O.	1997	8,787,000
Other 1998 - 2008	2005	14,915,000
LAVWMA Original	1980	7,271,000
EBDA Original	1980	1,364,000
LAVWMA 1-mgd	1983	602,000
LAVWMA 4.38-mgd	1986	2 ,157,000
TWA Planning	1987	1,036,000
Disposal Planning	2003	614,000
LAVWMA 2001 Debt	2004	1,817,000
Total Original Costs		76,144,000

Escalated Treatment & Disposal Costs. The next phase in determining the current value of the City's wastewater treatment and disposal facilities is to update historical costs to reflect changes in the value of money over time. This is achieved through use of the ENR construction cost index for the San Francisco metropolitan area. The historical cost of each facility is multiplied by the ratio of the estimated ENR construction cost index number for the year of valuation to that year during which the facility was constructed. This process is illustrated below:

Escalated cost =

$$\frac{\text{ENR Index January 2010}}{\text{Historical cost x ENR index at time of construction}}$$

Based on a November 2009 ENR CCI of 9719.42 near the midpoint of fiscal year 2008/09, an ENR CCI of 9719 is estimated for January 2010. The ratios used to escalate historical costs of each facility are shown below:

Facility	ENR CCI Index	ENR CCI ratio
Phase 1	765	12.7
Phase 4	4739	2.05
Phases 1- 4	1980	2.49
Phase 5	1994	1.53
Stage 1 R. O.	1997	1.44
Other 1998 - 2008	2005	1.17
LAVWMA Original	1980	2.49
EBDA Original	1980	2.49
LAVWMA 1-mgd	1983	1.89
LAVWMA 4.38-mgd	1986	1.89
TWA Planning	1987	1.80
Disposal Planning	2003	1.25
LAVWMA 2001 Debt	2004	1.18

As shown in Table 1, the January 2010 reproduction cost new (or escalated cost) of all City wastewater treatment and disposal facilities is estimated to be $148,369,000, as compared to the historical cost of $76,144,000. To determine the current value of these facilities, depreciation must be computed for each facility and deducted from the respective escalated cost of each facility.

Current Value of Treatment & Disposal Facilities. As previously discussed, the straight-line depreciation method, an almost universally accepted approach in public utility accounting, is used in this study to determine the current value of each facility. A depreciation rate is determined for each facility to account for anticipated losses caused by wear, tear, decay, inadequacy, and obsolescence. Each rate is a function of time and durability. The escalated cost, or reproduction cost new, of each facility is decreased by uniform installments over the useful life of the facility. Because both the City and LAVWMA have an established policy of accruing reserves for future replacements, these reserves are added to the current value of the City's wastewater facilities. The replacement reserves accrued as of January 2010 offset a portion of accumulated depreciation. Depreciation factors used in this study are summarized below:

Facility	Useful Life, years	Remaining Useful Life, years	Depreciation Factor
Phases 1 - 4	30	0	0.00
Phase 5	30	14	0.47
Stage 1 R. O.	30	17	0.57
Other 1998 - 2005	30	25	0.83
LAVWMA Original	50	20	0.40
EBDA Original	50	20	0.40
LAVWMA 1-mgd	50	23	0.46
LAVWMA 4.38-mgd	50	26	0.52
TWA Planning	50	27	0.54
Other 1997 – 2005	30	22	0.73
LAVWMA 2001 Debt	44	38	0.86

Based on the analyses developed in this study, the value of the City's wastewater treatment and disposal facilities as of January 2010 is estimated to be $99,936,000, as compared to historical costs of $76,144,000 and reproduction cost new (or current replacement cost) of $148,369,000.

Proposed Wastewater Expansion Facilities

The current design capacity of the existing City wastewater treatment and disposal facilities was increased to 8.5-mgd ADWF upon completion of the Phase 5 Expansion. The July 1998 contained expansions to the LAVWMA average dry-weather flow (ADWF)

limitation of 11.5-mgd, but this was lowered in the 2004 Study to 9.5-mgd based on master planning being done by Brown & Caldwell.

The current design capacity of the existing City wastewater treatment and disposal facilities was increased to 8.5-mgd ADWF upon completion of the Phase 5 Expansion. The connection fee study of July 1998 contained expansions to the LAVWMA average dry-weather flow (ADWF) limitation of 11.1-mgd, but this was been lowered in the 2004 Study to 9.5-mgd based on master planning being done then, and since, by Brown & Caldwell. An ADWF design capacity of 9.5-mgd continues to be used in the study presented herein, and wastewater capital improvement program costs with LAVWMA disposal costs are presented in Table 2. These costs are projected into future years but the dollars shown in Table 2 are current dollars, and are summarized below:

Wastewater Service	2010 Study
Sanitary Sewers	$7.5 M
Water Reclamation Plant	$28.2 M
Wastewater Disposal	$21.6 M
Total Costs	$57.3 M

Wastewater Connection Fee Development

There are three methods of developing connection fees for new system users that are currently employed by wastewater utilities. These include the system buy-in, marginal cost pricing, and value of service methods. Various pricing policy alternatives are developed for the City using each of these three methods of connection fee development in the subsections that follow. The available alternatives for developing connection fees for the City's Water Reclamation Plant (WRP) and in-valley disposal systems are summarized in Table 3. The number of equivalent single-family dwelling units shown in Table 3 are simply the design capacities divided by a flow allocation of 180 gallons per day (gpd) per Dwelling Unit Equivalent (DUE) used beginning with the August 2004 Study. Prior to the 2004 study, fees were based on 220 gpd and, as previously noted, fees were based on 280 gpd until the June 1998 Study. Flows have decreased over time due to water conservation via devices and practices and fewer persons per dwelling unit.

Note that this presentation in Table 3 does not consider current DUEs available for sale, current expansion reserves, debt financing, or the growth projections of each agency. The purpose of this Table 3 is to show alternative connection fees with a design of 180 gpd with no allowances for infiltration/inflow or administrative costs beyond those contained in the master planning. Actual fee design is based on more sophisticated long-term cash flow analyses used by the City since 1990 by this Consultant. Table 3 is an earlier means of connection fee design and is very useful for comparison purposes. Note that expansion costs of sanitary sewers are not included in Table 3.

System Buy-In Method. Under the system buy-in method, connection fees are designed to derive the average investment per connection, either at historical cost or current value. The new user "buys into" the system by paying for the investment in the facilities he will use. In this study, the current value of the City wastewater treatment and disposal facilities is defined as reproduction cost new less depreciation.

Table 2. Wastewater Expansion Capital Improvement Program Costs With Disposal Via LAVWMA, Current Dollars and Thousands of Dollars

Capital Improvement Project	Project type	Prior-2038 Total, $1K	Actual Costs, Dollars: Prior	05/06	06/07	07/08	08/09	Projected Costs……Thousands of Dollars, Fiscal year ending June 30: 09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19
Revenue Refund Expense	WRP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988-15 Mstr Plan Sewer Strm Water	Sewers	1,969	589,388	63,466	21,559	34,642	15,456	24	20	100	10	150	10	10	10	10	10
1993-64 GIS Mapping	Sewers	2,135	110,246	30,341	31,740	33,740	61,786	69	73	69	69	69	69	69	69	69	69
1997-55 Standby Power	WRP	142	27,333	0	100	114,394	0	0	0	0	0	0	0	0	0	0	0
1997-67 Aerial Map Upgrades	Sewers	174	6,500	5,000	0	0	0	28	10	5	5	5	5	5	5	5	5
1998-49 WRP Phase VI	WRP	18,125	0	870	185,084	840,719	498,373	50	2,250	0	4,600	0	9,700	0	0	0	0
1998-51 Recycled Water System Improvements	WRP	3,958	122,955	13,007	9,890	924,977	587,368	2,000	300	0	0	0	0	0	0	0	0
1998-63 Mapping Mgmt	Sewers	94	8,338	0	2,279	0	0	3	3	3	3	3	3	3	3	3	3
1998-74 Major Sanitary Sewer Upgrades	Sewers	2,461	0	0	54,751	44,660	1,330	35	510	188	0	0	0	0	0	0	0
2000-44 Hydraulic Mix Digesters	WRP	1,219	1,033,505	185,206	0	0	0	0	0	0	0	0	0	0	0	0	0
2000-79 WRP Laboratory Building	WRP	2,626	0	23,268	108,797	238,690	55,613	1,550	650	0	0	0	0	0	0	0	0
2002-25 Bar Screen	WRP	303	299,467	3,310	0	0	0	0	0	0	0	0	0	0	0	0	0
2002-33 Recycled Water Filter Modifications	Disposal	402	400,915	1,330	0	0	0	0	0	0	0	0	0	0	0	0	0
2003-21 Phase 1 First Street	Sewers	157	0	154,187	1,944	530	0	0	0	0	0	0	0	0	0	0	0
2004-17 Downtown Sewer Impr.	Sewers	4,714	1,063,521	525,383	2,405,927	360,827	18,029	5	335	0	0	0	0	0	0	0	0
2004-44 Cogeneration	WRP	974	0	67,840	55,475	79,520	0	21	0	0	750	0	0	0	0	0	0
2006-03 Annual Sewer Replacement Project 2006	Sewers	165	0	0	0	49,532	115,293	0	0	0	0	0	0	0	0	0	0
2006-17 Airway Blvd. Recycled Pipeline	Disposal	212	0	0	28,700	183,184	0	0	0	0	0	0	0	0	0	0	0
2006-45 Wastewater Irrigation Incentive Program	Disposal	491	0	0	0	0	46,064	185	260	0	0	0	0	0	0	0	0
2008-39 College Lift Station Replacement	Sewers	95	0	0	7,210	15,280	42,390	10	20	0	0	0	0	0	0	0	0
2008-48 WRP Electrical Distribution Improvements	WRP	3,017	0	0	0	0	26,545	40	1,250	0	0	0	300	0	0	0	0
2011-11 WRP Phase VI Liquid Treatment Improvements	WRP	1,700	0	0	0	0	0	0	0	0	0	500	0	0	0	0	0
2012-11 WRP Belt Press Hopper	WRP	150	0	0	0	0	0	0	0	0	0	0	0	150	0	0	0
2012-15 WRP Class A Digestion Conversion	WRP	600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
583014 First St Streetscape	Sewers	113	0	0	113,240	0	0	0	0	0	0	0	0	0	0	0	0
Other CIP expenses	WRP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total, Sanitary Sewer Construction & Expansion		45,994	3,662,169	1,073,207	3,026,696	2,920,696	1,468,247	4,019	5,681	366	5,437	727	10,087	237	87	87	87
Disposal expansion via LAVWMA																	
Export (22.87%x70.79%x6-30-09 Principal$131.16M)	Disposal	21,234															
Sole-use expansion (Interceptor & WRP Pump Station)**	Disposal																
Storage at WRP	Disposal	0															
Total, disposal expansion capital costs	Disposal	21,234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All Expansion Capital Costs =	Sewers	12,076	1,777,993	778,377	2,638,650	539,211	254,284	173	971	366	87	227	87	87	87	87	87
	WRP	32,813	1,483,261	293,500	359,346	2,198,301	1,167,899	3,661	4,450	0	5,350	500	10,000	150	0	0	0
	Disposal	22,340	400,915	1,330	28,700	183,184	46,064	185	260	0	0	0	0	0	0	0	0
Total, all expansion capital costs		67,229	3,662,169	1,073,207	3,026,696	2,920,696	1,468,247	4,019	5,681	366	5,437	727	10,087	237	87	87	87

Capital Improvement Project	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36	36/37	37/38	Total, 09/10-38
Revenue Refund Expense	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988-15 Mstr Plan Sewer Strm Water	10	250	10	10	10	10	10	10	250	10	10	10	10	10	10	250	10	10	10	1,264
1993-64 GIS Mapping	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	2,005
1997-55 Standby Power	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1997-67 Aerial Map Upgrades	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	173
1998-49 WRP Phase VI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16,600
1998-51 Recycled Water System Improvements	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,300
1998-63 Mapping Mgmt	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	90
1998-74 Major Sanitary Sewer Upgrades	827	0	0	0	0	800	0	0	0	0	0	0	0	0	0	0	0	0	0	2,360
2000-44 Hydraulic Mix Digesters	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2000-79 WRP Laboratory Building	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,200
2002-25 Bar Screen	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002-33 Recycled Water Filter Modifications	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2003-21 Phase 1 First Street	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2004-17 Downtown Sewer Impr.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	340
2004-44 Cogeneration	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	771
2006-03 Annual Sewer Replacement Project 2006	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2006-17 Airway Blvd. Recycled Pipeline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2006-45 Wastewater Irrigation Incentive Program	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	445
2008-39 College Lift Station Replacement	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30
2008-48 WRP Electrical Distribution Improvements	0	400	0	0	0	0	500	0	0	0	0	500	0	0	0	0	0	0	0	2,990
2011-11 WRP Phase VI Liquid Treatment Improvements	0	600	0	0	0	0	600	0	0	0	0	0	0	0	0	0	0	0	0	1,700
2012-11 WRP Belt Press Hopper	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	150
2012-15 WRP Class A Digestion Conversion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	600	0	0	0	600
583014 First St Streetscape	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other CIP expenses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total, Sanitary Sewer Construction & Expansion	914	1,327	87	87	87	887	1,187	87	327	87	87	587	87	87	87	927	87	87	87	34,018
Disposal expansion via LAVWMA																				
Export (22.87%x70.79%x6-30-09 Principal$131.16M)																				
Sole-use expansion (Interceptor & WRP Pump Station)**																				
Storage at WRP																				
Total, disposal expansion capital costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All Expansion Capital Costs = (Sewers)	914	327	87	87	87	887	87	87	327	87	87	87	87	87	87	327	87	87	87	6,262
(WRP)	0	1,000	0	0	0	0	1,100	0	0	0	0	500	0	0	0	600	0	0	0	27,311
(Disposal)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	445
Total, all expansion capital costs	914	1,327	87	87	87	887	1,187	87	327	87	87	587	87	87	87	927	87	87	87	34,018

*Expansion planning is based on the recently adopted General Plan that results in an ultimate ADWF design of 9.5-mgd. Costs are for November 9, 2009 at an ENR CCI of 9719 .

**Sole-use disposal expansion costs are funded from proceeds of the LAVWMA March 2001 Revenue Bonds. Principal was $142,385,000 of which Livermore's share is 22.87 % x 70.79 % or $23,052,000.

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In addition to developing prices based on historical costs and the current value of the City treatment and disposal facilities, prices are developed for each expansion phase. The purpose of this additional segregation is to facilitate price comparisons between different methods of connection fee development and different expansion phases. As shown in Table 3, connection fees developed under the system buy-in method vary from $1,610 to $2,790. The historical cost for the existing facilities is $1,610 as compared to the current value of $2,120.

Under both historical costs and current value, connection fees for 9.5-mgd are far less than the connection fees associated with the other expansion phases because the LAVWMA Export Facilities Project is far more expensive even when adjusting for inflation than construction of the original LAVWMA facilities. However, the 2004 study showed that In-Valley disposal costs were twice as costly as disposal via LAVWMA. Savings in operation and maintenance expenses will probably be realized at each expansion stage as a result of the economies of scale of operating a larger system. This is likely to occur because many operating costs are fixed within a relatively large range of operation. These fixed costs are, therefore, spread over a larger customer base as the system is expanded.

Marginal Cost Pricing Method. This method is based on the sound economic principal that new system users should be responsible for only those incremental costs that they cause to be incurred. Accordingly, connection fees are designed to derive the incremental cost of system expansion. With multiple phases of treatment plant expansion, there will be variances in costs of different phases that are entirely attributable to variances in the available capacities of different treatment processes before and after each expansion. In order to maintain a sound pay-as-you-go financing policy as well as equitable connection fees, the costs of these various available capacities in the different processes must be incorporated in the pricing analysis.

As shown in Table 3, marginal cost pricing analyses, which are based on average incremental costs of system expansion, have been developed for each phase of construction. These analyses are based on the assumption that in the long run costs of system expansion will more closely approximate the average cost of existing and proposed facilities as compared to the incremental cost of each expansion. As shown in Table 3, average costs of system expansion calculated under the marginal cost pricing method range from $3,140 for existing facilities exclusive of outstanding debt to $3,710 for the City's proposed facilities and outstanding LAVWMA debt principal. New capacity unit costs are, therefore, greater than historical costs.

Incremental costs inclusive of outstanding WRP expansion debt are also shown in Table 3 for fiscal years 2009/10 through 2039/40. Note that these costs are exclusive of the costs of new debt service. The incremental unit cost is shown in Table 3 to be $6,670 or less than the average of incremental costs of new design capacity of $8,490 because there is still capacity available to fund a portion of new incremental costs with the next major WRP projects not anticipated until fiscal years 2011/12 and 2014/15 as shown in Table 2.

Value of Service Method. The value of service method was once the most frequently employed method of developing connection fees for wastewater utilities. Under this method, connection fees are based on the practices of other communities, tempered by the

Table 3. Alternatives for Developing Connection Fees - Water Reclamation Plant & LAVWMA

Connection fee alternative	Sewer Capacity, mgd	January 2010, $1,000	Single-family dwellings*	Connection fee, dollars
System Buy-In Method				
Historical Costs				
Existing Facilities	8.500	$76,144	47,222	$1,610
Existing & Phase 6	9.500	$103,900	52,778	$1,970
Existing & Phase 6 + LAVWMA	9.500	$123,317	52,778	$2,340
Existing & Phases 6, 7 + LAVWMA	9.500	$123,317	52,778	$2,340
Existing & Phases 6, 7, 8 + LAVWMA	9.500	$123,317	52,778	$2,340
Current Value				
Existing Facilities	8.500	$99,936	47,222	$2,120
Existing & Phase 6	9.500	$127,692	52,778	$2,420
Existing & Phase 6 + LAVWMA	9.500	$147,110	52,778	$2,790
Existing & Phases 6, 7 + LAVWMA	9.500	$147,110	52,778	$2,790
Existing & Phases 6, 7, 8 + LAVWMA	9.500	$147,110	52,778	$2,790
Marginal Cost Pricing Method				
Incremental Costs (2009/10-2039/40)				
Phase 6 WRP Expansion (new projects)	1.000	$27,756	5,556	$5,000
Disposal via LAVWMA (outstanding principal)	1.000	$19,417	5,556	$3,500
Phase 7 WRP	1.000	$0	5,556	
Phase 8 WRP	1.000	$0	5,556	
Average	1.000	$47,173	5,556	$8,490
Incremental costs & DUE sales** (09/10-39/40)	1.758	$65,121	9,765	$6,670
Average Cost				
Existing Facilities	8.500	$148,369	47,222	$3,140
Existing & Phase 6	9.500	$176,125	52,778	$3,340
Existing & Phase 6 + LAVWMA	9.500	$195,542	52,778	$3,710
Existing & Phases 6, 7 + LAVWMA	9.500	$195,542	52,778	$3,710
Existing & Phases 6, 7, 8 + LAVWMA	9.500	$195,542	52,778	$3,710
Value of Service Method (Fiscal Year 2007/08)				
Range for 35 Bay Area communities				
Low				$780
High				$22,186
Average				$5,817
Range for 784 California communities				
Low				$0
High				$22,305
Average				$3,870

*Contains no allowance for I/I and no allowannce for administrative expenses, and connection fees are based on flows of 180 gpd per unit.

**Future costs are for only Water Reclamation Plant and disposal expansion exclusive of new debt & total incremental costs and DUE sales include outstanding debt of $37.37 million.

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ability of new users to pay. The value of service methods yields a range of fees that appear reasonable rather than a specific fee.

Theoretically, the maximum connection fee that could be assessed a new user is equal to the value of service associated with the new connection. An obvious measure of value of service can be obtained from cost comparisons between municipal treatment and private systems. The less obvious but more important value considerations are a function of increased property values associated with greater land use density potentials afforded by municipal treatment. The actual value of service can, therefore, amount to thousands of dollars.

The consultant does not know of any wastewater utility that has established connection fees based solely on the value of service. On the other hand, until recently very few wastewater utilities have connection fees based entirely on the cost of service. In fact, most wastewater utilities used to set connection fees at a point somewhere in between these two extremes - the selection of which is often based on the practices of other wastewater utilities. Today, it is necessary to have a nexus between connection fees and expansion facilities. Nonetheless, the value-of-service analysis is useful for comparison purposes and to note why fees are lower or higher than those assessed by other agencies.

The connection fees of thirty-five northern California communities for last fiscal year 2007/08 are presented in Table 4; connection fees for 15 Alameda County utilities and 784 California municipal wastewater utilities are also summarized in Table 4. As shown in Table 4, connection fees for these thirty-five northern California communities shown vary significantly and ranged from $780 to $22,186 as compared to the City's fiscal year 2007/08 fee of $4,199 and its current connection fee of $4,534; the average of these fees was $5,817. The connection fees of 784 California communities ranged from nothing to $22,305 and averaged $3,870. These connection fees for fiscal year 2007/08 were escalated to January 2010, the midpoint of current fiscal year 2009/10, based on anticipated inflation. The actual connection fee increases will vary for each agency according to specific policies, inflation expectations, current and proposed expansion projects, and the frequency of review. Note that California communities with relatively high connection fees like the City can probably be characterized as having expensive wastewater treatment and/or disposal problems and a policy of requiring new customers to fund the full costs of system expansion on a pay-as-you-go basis without risk to existing customers via debt financing.

The connection fees of the Livermore-Amador Valley are higher than average connection fees in other San Francisco Bay Area and California communities because of the unusual wastewater disposal problems in the Livermore-Amador Valley. In addition, communities with a higher demand for growth generally are more conscious of requiring new users to pay to support system expansion, and new users are willing to pay these higher fees in order to locate in those communities. Finally, high growth communities are building newer capacity which costs more than older capacity as the result of inflation and the lack of grant funding which was a major source of funding for past wastewater management projects.

It is interesting to note that the City's expansion reserves exceed the relatively little outstanding debt as a result of having an established policy of financing wastewater system improvements and expansions via a one-time connection fee assessed new system users. However, most wastewater utilities assess connection fees and monthly debt service charges.

Table 4. User Charges & Connection Fees Of Other California Communities

Agency	FY 2007/08 Survey Of 5-08		Escalated To FY 2009/10	
	Monthly User Charge, Dollars	Connection Fee, Dollars	Monthly User Charge, Dollars	Connection Fee, Dollars
Albany City of	37.40	2,283	39.70	2,400
American Canyon City of	36.79	8,016	39.00	8,500
Antioch City of	24.10	6,167	25.60	6,500
Benicia City of	41.33	7,500	43.80	8,000
Brentwood City of	19.00	4,881	20.20	5,200
Castro Valley S. D.	17.50	9,700	18.60	10,300
Central Costa County Sanitary District	25.00	4,524	26.50	4,800
Concord, City of	24.50	4,305	26.00	4,600
Crockett Community Services District	44.42	2,425	47.10	2,600
Dublin San Ramon Services District	25.55	11,230	27.10	11,900
Fairfield-Suisun Sanitary District	23.03	5,943	24.40	6,300
Hayward City of	23.31	6,148	24.70	6,500
Hercules-Pinole WPCP	38.08	1,350	40.40	1,400
Morgan Hill City of	34.50	9,767	36.60	10,400
Napa Sanitation District	30.17	5,660	32.00	6,000
Novato Sanitary District	31.83	7,000	33.80	7,400
Oakland City of	33.80	1,631	35.90	1,700
Oakley (Iron House S.D.)	38.75	7,368	41.10	7,800
Oro Loma Sanitary District	16.08	6,555	17.10	7,000
Petaluma City of	56.45	3,774	59.90	4,000
Pleasanton City of	31.50	10,400	33.40	11,000
Rodeo Sanitary District	46.50	5,000	49.30	5,300
Rohnert Park City of	85.00	22,186	90.20	23,500
Sacramento City of	31.87	7,231	33.80	7,700
San Jose/Santa Clara WPCP	23.56	780	25.00	800
San Leandro City of	26.29	1,292	27.90	1,400
Santa Barbara City of	29.81	2,240	31.60	2,400
Santa Rosa, City of	63.00	12,500	66.80	13,300
San Mateo City of	33.44	2,133	35.50	2,300
Sunnyvale City of	23.98	3,023	25.40	3,200
Stege Sanitary District	28.28	2,449	30.00	2,600
Union Sanitary District	20.28	3,459	21.50	3,700
Vacaville City of	31.65	7,159	33.60	7,600
Vallejo Sanitation/Flood Control District	24.75	2,230	26.30	2,400
West Bay Sanitary District	31.67	5,299	33.60	5,600
Range of 35 northern California communities				
Low	16.08	780	18.60	1,400
High	85.00	22,186	66.80	23,500
Average	32.90	5,817	35.00	6,174
Range for Alameda County (15 reporting)				
Low	16.08	1,125	17.10	1,200
High	37.75	11,230	40.00	11,900
Average	28.32	4,954	30.00	5,300
Range for 784 California communities				
Low	0.00	0	0.00	0
High	231.92	22,305	246.00	23,700
Average	33.82	3,870	35.90	4,100
City of Livermore, Existing & Proposed	37.70	4,199	39.70	5,275
			Revised	12-Feb-10

Thus, new users in most communities are assessed both connection fees and debt service requirements for the capacity they use. New City customers are only assessed connection fees for wastewater treatment capacity, though annual debt service payments of $3.10 monthly are contained in the user charges implemented July 1, 2008 for fiscal years 2008/09 and 2009/10 assessed each equivalent single-family dwelling unit for disposal services.

Long-Term Wastewater Cash Flow Analyses

Long-term cash flow analyses incorporate estimates of all of the variables for funding expansion. Details of the expansion costs are shown in Table 2 in current dollars through fiscal year 2037/38. Assumptions for projections of growth, inflation, interest income, and debt expense are discussed subsequently.

Wastewater Growth Projections. Growth projections provided by the City are shown in Table 5 through fiscal year 2039/40. Note that growth projections for residential and nonresidential customers are segregated in Table 5 and shown on a dwelling unit equivalent (DUE) basis with a flow allocation of 180 gallons per day (gpd) as previously noted. Further note that City staff estimates that there are currently 2,752 DUEs sold but not connected to the City's wastewater system.

As shown in Table 5, residential growth is estimated to be 53 percent of growth, and near-term growth is projected to slow considerably for the next four years in addition to this current fiscal year. Thereafter, growth is projected to average just under 0.9 percent annually as compared to historical growth of 3.0 percent since the first connection fee study was conducted by this Consultant in 1990. The projected ultimate ADWF capacity shown in Table 5 is 9.472-mgd or the same as for the November 2005 Study, as compared to 10.6-mgd in the 1998 Study and a LAVWMA influent limitation of 11.1-mgd for the City of Livermore.

Inflation & Interest. As shown in Table 5, near-term assumptions reflect current conditions but long-term assumptions include inflation of 3.0 percent annually and interest income at 2.5 percent greater than inflation. Outstanding debt service was provided by LAVWMA and the City. In this study, when bonds are estimated, bond assumptions are 2 points issuance fees, 9 points bond reserves used to pay the last payment, interest at 6 percent, and a term of 30 years. Note that existing and new debt service payments are not shown in Table 2 which contains costs of various expansion projects.

Historical Wastewater Cash Flow Analysis. Historical and projected Sanitary Sewer Construction and Expansion Fund cash flow for the past eighteen years since fiscal year 1990/91 when this study was first conducted is presented in Table 6. As shown in Table 6, the City's wastewater connection fee in fiscal year 1990/91 was $3,100 and the fund balance was $7.34 million. Today, the connection fee has increased to only $4,534 and the fund balance is $26.4 million.

Proposed Wastewater Minimum Base Fee Cash Flow Analysis. A proposed Minimum Base Fee cash flow analysis for the City's Sanitary Sewer Construction and Expansion Fund is presented in Table 7 for the next thirty fiscal years through 2039/40. This analysis is designed to minimize debt financing and have a minimal ending fund balance after funding all costs of expansion projects and debt financing over the next thirty years. As shown in Table 7, the beginning fund balance as of July 1, 2009 is $26.4 million and the

Table 5. Actual and Estimated Rates of Inflation, Interest & Growth Used for Study Projections

Fiscal	Rate, percent		Growth, DUEs			Growth,	Capacity,
Year	Inflation	Interest	Residential	Nonresidential	Total	percent	mgd*
Actual							
1990/91	2.0%	0.5%			230	0.4%	4.371
1991/92	2.8%	5.4%			525	0.9%	4.412
1992/93	1.2%	2.3%			529	2.1%	4.507
1993/94	2.9%	1.5%			452	2.1%	4.602
1994/95	0.8%	5.5%			657	6.5%	4.900
1995/96	0.4%	5.3%			502	4.7%	5.130
1996/97	-0.1%	5.0%			933	2.2%	5.244
1997/98	2.6%	5.2%			1,032	2.2%	5.357
1998/99	1.9%	5.6%			1,109	3.5%	5.543
1999/00	4.4%	5.1%			629	3.6%	5.742
2000/01	0.1%	5.4%			726	2.0%	5.856
2001/02	2.0%	2.7%			695	2.2%	5.986
2002/03	3.1%	2.9%			707	2.1%	6.111
2003/04	1.3%	2.8%			905	4.9%	6.411
2004/05	5.6%	1.5%			478	3.6%	6.640
2005/06	2.8%	2.0%			499	1.4%	6.730
2006/07	7.6%	3.3%			365	6.1%	7.142
2007/08	0.3%	3.8%			264	0.7%	7.190
2008/09	6.4%	0.7%	86	76	162	0.4%	7.219
Projected							
2009/10	3.0%	3.0%	45	40	85	0.2%	7.234
2010/11	3.0%	5.0%	45	40	85	0.2%	7.249
2011/12	3.0%	5.5%	45	40	85	0.2%	7.265
2012/13	3.0%	5.5%	45	40	85	0.2%	7.280
2013/14	3.0%	5.5%	100	88	188	0.5%	7.314
2014/15	3.0%	5.5%	153	136	289	0.7%	7.366
2015/16	3.0%	5.5%	206	183	389	1.0%	7.436
2016/17	3.0%	5.5%	206	183	389	0.9%	7.506
2017/18	3.0%	5.5%	206	183	389	0.9%	7.576
2018/19	3.0%	5.5%	206	183	389	0.9%	7.646
2019/20	3.0%	5.5%	206	183	389	0.9%	7.716
2020/21	3.0%	5.5%	206	183	389	0.9%	7.786
2021/22	3.0%	5.5%	206	183	389	0.9%	7.856
2022/23	3.0%	5.5%	206	183	389	0.9%	7.926
2023/24	3.0%	5.5%	206	183	389	0.9%	7.996
2024/25	3.0%	5.5%	206	183	389	0.9%	8.066
2025/26	3.0%	5.5%	206	183	389	0.9%	8.136
2026/27	3.0%	5.5%	206	183	389	0.9%	8.206
2027/28	3.0%	5.5%	206	183	389	0.9%	8.276
2028/29	3.0%	5.5%	206	183	389	0.8%	8.346
2029/30	3.0%	5.5%	206	183	389	0.8%	8.416
2030/31	3.0%	5.5%	206	183	389	0.8%	8.486
2031/32	3.0%	5.5%	206	183	389	0.8%	8.556
2032/33	3.0%	5.5%	206	183	389	0.8%	8.626
2033/34	3.0%	5.5%	206	183	389	0.8%	8.696
2034/35	3.0%	5.5%	206	183	389	0.8%	8.766
2035/36	3.0%	5.5%	206	183	389	0.8%	8.836
2036/37	3.0%	5.5%	206	183	389	0.8%	8.906
2037/38	3.0%	5.5%	206	183	389	0.8%	8.976
2038/39	3.0%	5.5%	0	0	0	0.0%	8.976
2039/40	3.0%	5.5%	0	0	0	0.0%	8.976
Permits already sold but not yet connected					2,752		9.472

*Actual average annual growth since 1990 & through 07/08 was 3.0%

**ADWF Limit is 11.100 -mgd per the LAVWMA JPA of September 10, 1997.

***Dwelling unit equivalent allocation is estimated at 180 gpd beginning 2005.

****WRP data for 2007 showed ADWF of 7.142 mgd, and 0.4953 mgd DUEs is estimated sold but not yet flowing with growth projections c 0.8728 mgd residential and 1.6468 mgd nonresidential. Projected growth is 0.9% annually.

Projected growth is 53% residential & 47% nonresidential.

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Table 6. Historical City of Livermore Wastewater Expansion Cash Flow Analysis, Fiscal Years 1990/91 Through 2007/08

Description	Fiscal Year Beginning July 1 and Ending June 30, Thousands Of Dollars																	
	90/91	91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08
Beginning balance	7,340	7,267	18,356	10,501	8,829	12,824	16,026	19,063	21,826	20,037	24,022	30,296	25,129	26,855	33,822	34,481	35,505	29,282
Income																		
Connection fees	714	1,629	1,905	1,682	2,447	1,873	3,517	3,993	4,292	5,409	6,532	6,505	6,804	8,711	4,423	3,220	1,460	1,051
Debt proceeds		14,657		1,565	15,922	630	5,819	0										
Other income				1,002	376	1,916	65	65	907	65		249						
Interest income	40	679	326	139	576	742	848	1,041	1,142	1,088	1,440	747	733	831	510	687	1,060	1,027
Total income	753	16,965	2,231	4,388	19,321	5,160	10,249	5,100	6,341	6,562	7,973	7,501	7,537	9,542	4,933	3,907	2,520	2,079
Expenses																		
Studies & projects																		
Phase 5 WRP	564	5,275	9,320	4,842														
Stage 1 R.O. Pilot	21	215	71	416	670	408	6,041		181									
LAVWMA & TWA plans	100	148	40	12	0	129	39	436										
Aerial mapping														2	5			
GIS updating														27	29			
Mapping mgt.														0	3			
Master Planning	32	62	72											180	264			
Budget items	31	0	45	381	0	0	0	323	435	1,534	313	5,826	1,146	31	19			
WRP CIPs																293	359	2,198
Disposal CIPs																1	29	183
Future expansions																		
Phase 6 + CIPs													0	277	1,761			
Phase 7																		
Phase 8																		
Disposal														6	427	0	4,874	1,168
LAVWMA 2001 Debt																		
LAVWMA Sole-Use																		
LAVWMA Storage																		
Sanitary Sewers							0	407	2,256	54	186	400	3,664	1,314	1,015	778	2,639	539
Debt service payments									4,487	686	429	5,901						
1991 COP's		175	539	409	14,657	270												
SWRCB Phase 5						771	771	771	771	771	771	771	771	771	771	771	771	771
1995 COP's						180	451	400	0	0	0	0	0	0	0	0	0	0
SWRCB R. O. Pilot									0	0	0	0	0	0	0	0	0	0
New Debt #1																		
New Debt #2																		
Adjustments to audits			0	0	0	201	(90)	0	0	(468)	0	(230)	230	(31)	(18)	259	0	18
General Fund transfers to	79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	780	72	103
Total Expenses	827	5,875	10,087	6,060	15,327	1,958	7,211	2,337	8,130	2,578	1,699	12,668	5,810	2,576	4,274	2,883	8,743	4,980
Ending Balance	7,267	18,356	10,501	8,829	12,824	16,026	19,063	21,826	20,037	24,022	30,296	25,129	26,855	33,822	34,481	35,505	29,282	26,381
Connection Fee, Dollars	3,100	3,100	3,600	3,723	3,723	3,728	3,770	3,869	3,869	8,600	9,002	9,353	9,626	9,626	8,900	6,450	4,000	4,199

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Table 7. Minimum Base Fee: City of Livermore Long-Term Wastewater Expansion Cash Flow Analysis For Fiscal Years 2008/09 (Actual) - 2039/40 (Projected)

Description	Fiscal Year Beginning July 1 and Ending June 30, Thousands Of Dollars															
	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24
Beginning Balance	26,381	23,906	18,490	11,300	9,584	1,910	14,232	1,605	1,028	678	379	137	8,026	5,794	5,335	4,932
	4-Year Economic Cycling at				100% .	Maximum fund balance is 5 years debt service a						$17.1	million.			
Income						Minimum fund balance is 2 years debt service at						$6.8	million.			
Connection Fees	700	450	463	477	492	1,118	1,770	2,455	2,529	2,604	2,682	2,762	2,846	2,931	3,019	3,110
News Debt Proceeds						14,000						9,000				
Other Income																
Interest Income	662	627	727	559	308	432	424	70	46	28	14	218	370	298	275	255
Total Income	1,362	1,076	1,190	1,036	800	15,550	2,194	2,525	2,574	2,633	2,696	11,980	3,215	3,229	3,293	3,365
Expenses																
CIP Expenses																
Sewers	254	178	1,030	399	98	263	104	107	110	114	117	1,265	466	128	132	136
WRP	1,168	3,771	4,721	0	6,021	580	11,941	184	0	0	0	0	1,426	0	0	0
Disposal	46	191	276	0	0	0	0	0	0	0	0	0	0	0	0	0
Future CIP Expenses																
Sewers																
WRP																
Disposal																
LAVWMA Storage																
Existing Debt Service																
SWRCB Phase 5	771	771	771	771	771	771										
LAVWMA 2001 Debt	1,558	1,559	1,559	1,559	1,559	1,558	1,559	1,558	1,558	1,559	1,558	1,559	1,558	1,558	1,559	1,559
New Debt Service																
New Debt #1							1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129
New Debt #2													726	726	726	726
Replacement Transfer	0															
General Fund Transfer	40	22	23	24	25	56	89	123	126	130	134	138	142	147	151	156
Total Expenses	3,837	6,492	8,380	2,753	8,474	3,228	14,821	3,102	2,924	2,932	2,938	4,091	5,448	3,688	3,696	3,705
Ending Balance	23,906	18,490	11,300	9,584	1,910	14,232	1,605	1,028	678	379	137	8,026	5,794	5,335	4,932	4,593
Connection Fee, Dollar	4,329	5,275	5,435	5,600	5,770	5,945	6,125	6,310	6,500	6,695	6,895	7,100	7,315	7,535	7,760	7,995

Description	Fiscal Year Beginning July 1 and Ending June 30, Thousands Of Dollars															
	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36	36/37	37/38	38/39	39/40
Beginning Balance	4,593	3,002	863	568	(82)	(237)	(300)	(446)	1,291	3,235	5,400	5,938	8,487	11,300	14,393	13,279
Income																
Connection Fees	3,203	3,299	3,398	3,499	3,604	3,713	3,824	3,939	4,057	4,180	4,304	4,433	4,565	4,701	0	0
News Debt Proceeds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Income	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest Income	203	103	38	13	(9)	(14)	(20)	23	121	231	303	386	530	688	741	376
Total Income	3,407	3,402	3,436	3,512	3,596	3,699	3,804	3,961	4,178	4,411	4,608	4,819	5,094	5,389	741	376
Expenses																
CIP Expenses																
Sewers	1,424	144	148	574	157	162	167	172	177	182	705	193	199	205	0	0
WRP	0	1,818	0	0	0	0	958	0	0	0	1,294	0	0	0	0	0
Disposal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future CIP Expenses																
Sewers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WRP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Disposal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LAVWMA Storage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Debt Service																
SWRCB Phase 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LAVWMA 2001 Debt	1,559	1,559	1,559	1,559	1,559	1,559	779	0	0	0	0	0	0	0	0	0
New Debt Service																
New Debt #1	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	5,645
New Debt #2	726	726	726	726	726	726	726	726	726	726	726	726	726	726	726	7,258
Replacement Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General Fund Transfer	160	165	170	175	180	186	191	197	203	209	215	222	228	235	0	0
Total Expenses	4,997	5,541	3,732	4,162	3,751	3,761	3,950	2,224	2,235	2,246	4,069	2,270	2,282	2,295	1,855	12,902
Ending Balance	3,002	863	568	(82)	(237)	(300)	(446)	1,291	3,235	5,400	5,938	8,487	11,300	14,393	13,279	752
Connection Fee, Dollar	8,235	8,480	8,735	8,995	9,265	9,545	9,830	10,125	10,430	10,745	11,065	11,395	11,735	12,085	12,450	12,825

Beginning FY 2009/10 fund balance is $23.9 million and the present value ending fund balance for FY 2039/40 is estimated a $0.3 million.
The fiscal year 2009/10 connection fee is $5,275 that is escalated annually thereafter for inflation.
Present value of new debt is estimated a $18.6 million of bond proceeds or bond issues of $20.6 million.

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ending fund balance is a present value $0.3 million as of June 30, 2040. As shown in Table 7, this analysis assumes a fiscal year 2009/10 connection fee increase from $4,534 to $5,275 escalated annually thereafter for inflation through fiscal year 2039/40. This analysis also assumes new debt financings of $20.6 million in addition to outstanding debt service payments totaling $38.1 million. There are many assumptions in this analysis as previously discussed including 180 gpd/DUE as compared to 220 gpd/DUE in studies prior to the 2004 Study. This fee of $5,275 contains no allowance for economic cycling modeling or minimum reserves of two years debt service and maximum reserves of five years debt service.

Phasing In Minimum Base Fee. Due to the current economic slow down, City staff requested an analysis that maintains the current fee over next fiscal year 2009/10 and then phases in the Proposed Minimum Base Fee over the following four fiscal years at twenty-five percent per year of the minimum increase needed. This is shown below, and is presented the thirty-year cash flow projections shown in Table 7a. The affect is an ending present value of a negative $0.0 million instead of a positive ending fund balance of $0.3 million or a loss of revenues of $0.3 million.

Fiscal Year	09/10	10/11	11/12	12/13	13/14
Minimum Fee	$5,275	$5,435	$5,600	$5,770	$5,945
Phasing Increase					
Percent Increase	0%	25%	50%	75%	100%
Phasing Fee	$4,534	$4,760	$5,065	$5,460	$5,945
Fee Increase	$0	$226	$305	$395	$485
Current $ Phasing*	$4,534	$4,620	$4,775	$4,995	$5,275
Increase	$0	$86	$155	$220	$280
Alternate Phasing					
Current $ Phasing*	$4,534	$4,720	$4,905	$5,090	$5,275
Increase	$0	$185	$185	$185	$185

Economic Cycling. Economic cycling was a new concept designed by this Consultant beginning a decade ago in 1999 at the request of LAVWMA, DSRSD and Pleasanton in order to minimize the risk of sewer expansion debt to existing ratepayers. Because the LAVWMA expansion project and the Stage 4 DSRSD Treatment Plant expansion could not be phased, nearly all expansion costs occurred before growth provides connection fee revenues. Furthermore, these wastewater expansion costs were, and still are, very large relative to the existing customer base, and particularly for DSRSD. Because revenue bonds must be secured via revenues of existing ratepayers and not connection fees that are uncertain, the inability to phase such large projects and their size relative to the current customer base creates risk to existing wastewater ratepayers. Analyses of this Consultant's studies for the past twenty plus years for these agencies found the worst four-year period had DUE sales of 35 percent of the historical rate. Accordingly, economic cycling was designed so that every four years only 35 percent of projected DUE sales were sold, and then the balance of 65 percent were projected to be sold over the following four years along with the projected DUE sales for those following four years. This helped DSRSD and Pleasanton reach agreement for regional sewer connection fee design, which is uniform for both agencies, by adding a significant contingency for when projected DUE sales may not be realized.

Table 7a. Phasing In Minimum Base Fee: City of Livermore Long-Term Wastewater Expansion Cash Flow Analysis For Fiscal Years 2008/09 - 2039/40

Description	Fiscal Year Beginning July 1 and Ending June 30, Thousands Of Dollars															
	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24
Beginning Balance	26,381	23,906	18,429	11,180	9,413	1,704	14,014	1,375	786	423	110	(148)	7,726	5,477	5,001	4,580
	4-Year Economic Cycling at				100% .	Maximum fund balance is 5 years debt service a						$17.1	million.			
Income						Minimum fund balance is 2 years debt service at						$6.8	million.			
Connection Fees	700	387	406	432	465	1,118	1,770	2,455	2,529	2,604	2,682	2,762	2,846	2,931	3,019	3,110
News Debt Proceeds						14,000						9,000				
Other Income																
Interest Income	662	626	722	551	298	421	412	58	32	14	(1)	203	353	280	256	236
Total Income	1,362	1,012	1,128	983	763	15,538	2,182	2,512	2,561	2,619	2,681	11,965	3,199	3,212	3,275	3,346
Expenses																
CIP Expenses																
Sewers	254	178	1,030	399	98	263	104	107	110	114	117	1,265	466	128	132	136
WRP	1,168	3,771	4,721	0	6,021	580	11,941	184	0	0	0	0	1,426	0	0	0
Disposal	46	191	276	0	0	0	0	0	0	0	0	0	0	0	0	0
Future CIP Expenses																
Sewers																
WRP																
Disposal																
LAVWMA Storage																
Existing Debt Service																
SWRCB Phase 5	771	771	771	771	771	771										
LAVWMA 2001 Debt	1,558	1,559	1,559	1,559	1,559	1,558	1,559	1,558	1,558	1,559	1,558	1,559	1,558	1,558	1,559	1,559
New Debt Service																
New Debt #1							1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129
New Debt #2													726	726	726	726
Replacement Transfer	0															
General Fund Transfer	40	19	20	22	23	56	89	123	126	130	134	138	142	147	151	156
Total Expenses	3,837	6,489	8,377	2,750	8,472	3,228	14,821	3,102	2,924	2,932	2,938	4,091	5,448	3,688	3,696	3,705
Ending Balance	23,906	18,429	11,180	9,413	1,704	14,014	1,375	786	423	110	(148)	7,726	5,477	5,001	4,580	4,221
Connection Fee, Dollar	4,329	4,534	4,760	5,065	5,460	5,945	6,125	6,310	6,500	6,695	6,895	7,100	7,315	7,535	7,760	7,995

Description	Fiscal Year Beginning July 1 and Ending June 30, Thousands Of Dollars															
	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36	36/37	37/38	38/39	39/40
Beginning Balance	4,221	2,610	450	132	(542)	(723)	(813)	(987)	721	2,633	4,765	5,269	7,781	10,554	13,607	12,449
Income																
Connection Fees	3,203	3,299	3,398	3,499	3,604	3,713	3,824	3,939	4,057	4,180	4,304	4,433	4,565	4,701	0	0
News Debt Proceeds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Income	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest Income	183	82	16	(11)	(34)	(41)	(48)	(7)	90	198	269	349	491	647	697	330
Total Income	3,386	3,381	3,413	3,488	3,570	3,672	3,776	3,932	4,147	4,378	4,573	4,782	5,056	5,348	697	330
Expenses																
CIP Expenses																
Sewers	1,424	144	148	574	157	162	167	172	177	182	705	193	199	205	0	0
WRP	0	1,818	0	0	0	0	958	0	0	0	1,294	0	0	0	0	0
Disposal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future CIP Expenses																
Sewers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WRP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Disposal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LAVWMA Storage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Debt Service																
SWRCB Phase 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LAVWMA 2001 Debt	1,559	1,559	1,559	1,559	1,559	1,559	779	0	0	0	0	0	0	0	0	0
New Debt Service																
New Debt #1	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	5,645
New Debt #2	726	726	726	726	726	726	726	726	726	726	726	726	726	726	726	7,258
Replacement Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General Fund Transfer	160	165	170	175	180	186	191	197	203	209	215	222	228	235	0	0
Total Expenses	4,997	5,541	3,732	4,162	3,751	3,761	3,950	2,224	2,235	2,246	4,069	2,270	2,282	2,295	1,855	12,902
Ending Balance	2,610	450	132	(542)	(723)	(813)	(987)	721	2,633	4,765	5,269	7,781	10,554	13,607	12,449	(123)
Connection Fee, Dollar	8,235	8,480	8,735	8,995	9,265	9,545	9,830	10,125	10,430	10,745	11,065	11,395	11,735	12,085	12,450	12,825

Beginning FY 2009/10 fund balance is $23.9 million and the present value ending fund balance for FY 2039/40 is estimated a ($0.0) million.
The fiscal year 2009/10 connection fee is $4,534 that is escalated annually thereafter for inflation.
Present value of new debt is estimated a $18.6 million of bond proceeds or bond issues of $20.6 million.

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City expansion planning showed a similar magnitude of this issue in the August 2004 Study when then faced with wastewater expansion planning for in-valley disposal, and to a lesser degree with wastewater expansion disposal via LAVWMA and with expansion of water and storm drain services. Given the resources expended on and the attention directed to this issue over several years for Tri-Valley wastewater expansion planning, it was then recommended, and it is now recommended again, that the City consider the potential impact of actual DUE sales being less than projected. Accordingly, connection fees are also designed for Economic Cycling as shown in Table 8. The affects of economic cycling are higher debt estimates and higher wastewater connection fee estimates. The question for the City will be whether some contingencies should be provided in wastewater connection fee design if actual growth is slower or less than growth projections made now. As shown in Table 8, the Minimum Base Fee of $5,275 developed in Table 7 increases to $5,700 with Economic Cycling for an increase of $325. Furthermore, estimated new debt financing increase from a present value of $20.6 million to $24.3 million due to delays in the receipt of connection fee revenue. Note that the Minimum Base Fee and Economic Cycling alternatives have nearly the same ending present value fund balances at $0.3 million and $0.3 million, respectively.

Minimum & Maximum Reserves. In conjunction with economic cycling for regional sewer expansion planning, DSRSD and Pleasanton also agreed to setting reserves at a minimum of two years debt service and increase the wastewater connection fee annually until reserves reached a maximum of five years debt service. This on top of economic cycling was helpful for the parties to reach agreement. It will, however, generate either surplus reserves later and/or lower connection fees later.

A thirty-year wastewater expansion cash flow analysis with Economic Cycling with Minimum & Maximum Reserves is presented in Table 9. As shown in Table 9, the fee increases to $7,170, as compared to the Minimum Base Fee of $5,275 and $5,700 with Economic Cycling. This is a significant increase of $1,895 over the Minimum Base Fee or 36 percent. Again, note that this is a question for the City as to what level of reserves should be held to be able to pay debt service if growth slows without the use of revenue from existing ratepayers.

Summary of Alternative Wastewater Connection Fees

The results of the alternative connection fee analyses are summarized on the following page along with the results of the 2005 Study. Note the affect of economic cycling is to create greater debt and higher fees, and the holding of higher reserves creates higher fees and a higher present value ending fund balance if fees are not later reduced. Further note the minimal ending fund balances of all alternatives without higher reserves are designed to keep them directly comparable.

Table 8. Economic Cycling: City of Livermore Long-Term Wastewater Expansion Cash Flow Analysis For Fiscal Years 2008/09 - 2039/40

Description	Fiscal Year Beginning July 1 and Ending June 30, Thousands Of Dollars															
	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24
Beginning Balance	26,381	23,451	17,752	10,245	8,180	701	16,804	5,280	6,335	4,491	2,570	569	7,582	6,940	8,216	9,703
	4-Year Economic Cycling at				35% .	Maximum fund balance is 5 years debt service a						$18.7	million.			
Income						Minimum fund balance is 2 years debt service at						$7.5	million.			
Connection Fees	245	170	175	180	771	1,902	3,010	4,174	954	982	1,012	1,042	4,838	4,983	5,133	5,287
News Debt Proceeds						17,000						10,000				
Other Income																
Interest Income	662	609	683	493	238	468	591	311	290	189	84	218	389	406	480	565
Total Income	907	779	858	673	1,008	19,370	3,601	4,485	1,243	1,171	1,096	11,260	5,227	5,389	5,612	5,852
Expenses																
CIP Expenses																
Sewers	254	178	1,030	399	98	263	104	107	110	114	117	1,255	466	128	132	136
WRP	1,168	3,771	4,721	0	6,021	560	11,941	184	0	0	0	0	1,426	0	0	0
Disposal	46	191	276	0	0	0	0	0	0	0	0	0	0	0	0	0
Future CIP Expenses																
Sewers																
WRP																
Disposal																
LAVWMA Storage																
Existing Debt Service																
SWRCB Phase 5	771	771	771	771	771	771										
LAVWMA 2001 Debt	1,558	1,559	1,559	1,559	1,559	1,558	1,559	1,558	1,558	1,559	1,558	1,559	1,558	1,558	1,559	1,559
New Debt Service																
New Debt #1							1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371
New Debt #2													806	806	806	806
Replacement Transfer	0															
General Fund Transfer	40	9	9	9	39	95	151	209	48	49	51	52	242	249	257	264
Total Expenses	3,837	6,478	8,365	2,738	8,488	3,267	15,125	3,429	3,087	3,093	3,097	4,247	5,870	4,113	4,125	4,136
Ending Balance	23,451	17,752	10,245	8,180	701	16,804	5,280	6,335	4,491	2,570	569	7,582	6,940	8,216	9,703	11,419
Connection Fee, Dollar	4,329	5,700	5,870	6,045	6,225	6,410	6,600	6,800	7,005	7,215	7,430	7,655	7,885	8,120	8,365	8,615

Description	Fiscal Year Beginning July 1 and Ending June 30, Thousands Of Dollars															
	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36	36/37	37/38	38/39	39/40
Beginning Balance	11,419	7,925	3,721	1,186	(1,889)	(11)	2,144	4,415	8,781	8,339	7,911	5,639	5,145	10,564	16,501	15,172
Income																
Connection Fees	1,208	1,244	1,282	1,320	6,128	6,312	6,502	6,697	1,530	1,576	1,623	1,672	7,763	7,995	0	0
News Debt Proceeds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Income	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest Income	518	312	131	(19)	(51)	57	176	353	458	435	363	289	420	724	848	424
Total Income	1,726	1,556	1,413	1,301	6,077	6,369	6,678	7,050	1,989	2,011	1,986	1,961	8,183	8,720	848	424
Expenses																
CIP Expenses																
Sewers	1,424	144	148	574	157	162	167	172	177	182	705	193	199	205	0	0
WRP	0	1,818	0	0	0	0	958	0	0	0	1,294	0	0	0	0	0
Disposal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future CIP Expenses																
Sewers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WRP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Disposal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LAVWMA Storage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Debt Service																
SWRCB Phase 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LAVWMA 2001 Debt	1,559	1,559	1,559	1,559	1,559	1,559	779	0	0	0	0	0	0	0	0	0
New Debt Service																
New Debt #1	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	6,854
New Debt #2	806	806	806	806	806	806	806	806	806	806	806	806	806	806	806	8,064
Replacement Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General Fund Transfer	60	62	64	66	306	316	325	335	77	79	81	84	388	400	0	0
Total Expenses	5,220	5,761	3,948	4,376	4,200	4,214	4,407	2,684	2,431	2,438	4,258	2,454	2,765	2,782	2,177	14,918
Ending Balance	7,925	3,721	1,186	(1,889)	(11)	2,144	4,415	8,781	8,339	7,911	5,639	5,145	10,564	16,501	15,172	678
Connection Fee, Dollar	8,875	9,140	9,415	9,695	9,985	10,285	10,595	10,915	11,240	11,575	11,920	12,280	12,650	13,030	13,420	13,825

Beginning FY 2009/10 fund balance is $23.5 million and the present value ending fund balance for FY 2039/40 is estimated a $0.3 million.
The fiscal year 2009/10 connection fee is $5,700 that is escalated annually thereafter for inflation.
Present value of new debt is estimated a $21.9 million of bond proceeds or bond issues of $24.3 million.

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Table 9. Economic Cycling and Minimum & Maximum Reserves: City of Livermore Long-Term Wastewater Expansion Cash Flow Analysis For FYs 2008/09 - 2039/40

Description	Fiscal Year Beginning July 1 and Ending June 30, Thousands Of Dollars															
	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24
Beginning Balance	26,381	23,451	17,794	10,333	8,319	981	17,579	6,859	9,054	7,600	6,098	4,546	12,040	12,862	15,722	18,916
	4-Year Economic Cycling at 35% . Maximum fund balance is 5 years debt service a $18.7 million.															
Income	Minimum fund balance is 2 years debt service at $7.5 million.															
Connection Fees	245	214	220	227	908	2,393	3,789	5,253	1,200	1,236	1,273	1,311	6,088	6,271	6,458	6,652
News Debt Proceeds						17,000						10,000				
Other Income																
Interest Income	562	610	686	499	249	497	654	426	446	367	285	444	667	765	927	1,108
Total Income	907	823	906	726	1,157	19,890	4,443	5,679	1,646	1,603	1,558	11,755	6,754	7,036	7,385	7,759
Expenses																
CIP Expenses																
Sewers	254	178	1,030	399	98	263	104	107	110	114	117	1,265	466	128	132	136
WRP	1,168	3,771	4,721	0	6,021	580	11,941	184	0	0	0	0	1,426	0	0	0
Disposal	46	191	276	0	0	0	0	0	0	0	0	0	0	0	0	0
Future CIP Expenses																
Sewers																
WRP																
Disposal																
LAVWMA Storage																
Existing Debt Service																
SWRCB Phase 5	771	771	771	771	771	771										
LAVWMA 2001 Debt	1,558	1,559	1,559	1,559	1,559	1,558	1,559	1,558	1,558	1,559	1,558	1,559	1,558	1,558	1,559	1,559
New Debt Service																
New Debt #1							1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371
New Debt #2													806	806	806	806
Replacement Transfer	0															
General Fund Transfer	40	11	11	11	45	120	189	263	60	62	64	66	304	314	323	333
Total Expenses	3,837	6,480	8,368	2,740	8,494	3,292	15,164	3,483	3,100	3,105	3,110	4,260	5,932	4,177	4,191	4,204
Ending Balance	23,451	17,794	10,333	8,319	981	17,579	6,859	9,054	7,600	6,098	4,546	12,040	12,862	15,722	18,916	22,471
Connection Fee, Dollar	4,329	7,170	7,385	7,605	7,835	8,070	8,310	8,560	8,815	9,080	9,350	9,630	9,920	10,220	10,525	10,840

Description	Fiscal Year Beginning July 1 and Ending June 30, Thousands Of Dollars															
	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36	36/37	37/38	38/39	39/40
Beginning Balance	22,471	19,890	16,657	15,156	13,183	17,434	22,140	27,148	34,452	35,807	37,288	37,041	38,695	47,915	57,920	58,869
Income																
Connection Fees	1,520	1,566	1,613	1,661	7,711	7,941	8,180	8,426	1,925	1,983	2,042	2,104	9,766	10,058	0	0
News Debt Proceeds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Income	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest Income	1,134	978	851	758	819	1,059	1,319	1,649	1,880	1,956	1,989	2,027	2,316	2,833	3,126	2,828
Total Income	2,654	2,544	2,464	2,419	8,530	9,001	9,500	10,074	3,806	3,939	4,032	4,131	12,084	12,891	3,126	2,828
Expenses																
CIP Expenses																
Sewers	1,424	144	148	574	157	162	167	172	177	182	705	193	199	205	0	0
WRP	0	1,818	0	0	0	0	958	0	0	0	1,294	0	0	0	0	0
Disposal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future CIP Expenses																
Sewers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WRP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Disposal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LAVWMA Storage	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Debt Service																
SWRCB Phase 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LAVWMA 2001 Debt	1,559	1,559	1,559	1,559	1,559	1,559	779	0	0	0	0	0	0	0	0	0
New Debt Service																
New Debt #1	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	6,854
New Debt #2	806	806	806	806	806	806	806	806	806	806	806	806	806	806	806	8,064
Replacement Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General Fund Transfer	76	78	81	83	386	397	409	421	96	99	102	105	488	503	0	0
Total Expenses	5,236	5,777	3,965	4,393	4,279	4,295	4,491	2,770	2,451	2,459	4,279	2,476	2,865	2,885	2,177	14,918
Ending Balance	19,890	16,657	15,156	13,183	17,434	22,140	27,148	34,452	35,807	37,288	37,041	38,695	47,915	57,920	58,869	46,778
Connection Fee, Dollar	11,165	11,500	11,845	12,200	12,565	12,940	13,330	13,730	14,140	14,565	15,000	15,450	15,915	16,390	16,880	17,385

Beginning FY 2009/10 fund balance is $23.5 million and the present value ending fund balance for FY 2039/40 is estimated a $18.7 million.
The fiscal year 2009/10 connection fee is $7,170 that is escalated annually thereafter for inflation.
Present value of new debt is estimated a $21.9 million of bond proceeds or bond issues of $24.3 million.

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Alternative	2005 Study	2010 Study
Current Fee	$8,900	$4,534
Minimum Base Fee	$4,000	$5,275
Economic Cycling Fee	$4,500	$5,700
Economic Cycling & Higher Reserves	$5,300	$7,170
Present Value of New Debt Needed		
Minimum Base Fee	$22.5M	$20.6
Economic Cycling Fee	$26.2M	$24.3
Economic Cycling & Higher Reserves	$26.2M	$24.3
Present Value Ending Fund Balance, FY 2039/40		
Minimum Base Fee	$1.9 M	$0.3
Economic Cycling Fee	$1.8 M	$0.3
Economic Cycling & Higher Reserves	$14.4M	$18.7

Wastewater Connection Fee Analyses for Selected Facilities. As shown in Table 2, future cost estimates for expansion are allocable 17.96 percent to the City's collection system (or sanitary sewer facilities), 48.81 percent to the City's Water Reclamation Plant (WRP), and 33.23 percent to disposal expansion. Accordingly, the Minimum Base Fee of $5,275 is allocable $948.00 to Collection, $2,575.00 to the WRP, and $1,752.00 to Disposal. There has been a shift of fee cost allocations to treatment (i.e., the WRP) since the 2005 Study. In the 2005 Study, future cost estimates for expansion for fiscal years 2005/06 through 2035/36 were allocable 17.01 percent to the City's collection system, 42.43 percent to the City's WRP, and 40.56 percent to disposal expansion. Accordingly, there has been a slight shift of fee cost allocations to treatment (i.e., the WRP). In the 2004 Study, future cost estimates for expansion were allocable 10.64 percent to the City's collection system, 16.19 percent to the City's WRP, and 73.17 percent to In-Valley Disposal expansion. This was because the costs of In-Valley disposal expansion were far greater than disposal expansion via LAVWMA which was implemented by the City after the Measure Election of November 2005.

Wastewater Connection Fee Recommendations

The City's current wastewater connection fee is $4,534 for an equivalent single-family residential dwelling unit. Based on current engineering planning and on the analyses presented herein, ideally the City should increase its connection fee to the Minimum Base Fee of $5,275. Though this is a significant increase, this proposed fee is far less than the average fee of $9,200 assessed for six fiscal years 1999/00 through 2004/05 based on In-Valley Disposal expansion. However, due to the current economic climate, it is entirely understandable that the City is likely to phase in the needed increase over five fiscal years with no increase next fiscal year 2010/11. As recommended in earlier studies, and implemented by the City with the 2004 Study, it is recommended that the City continue to assess nonresidential users connection fees based on equivalent single-family residential

connection fee unit costs for flow, biochemical oxygen demand (BOD), and suspended solids (SS) as shown in Tables 10 and 10a.

Economic Cycling and Higher Reserves. Ideally, the study recommendations would be based on pay-as-you-go financing for wastewater expansion costs with accrued wastewater connection fees and interest income without debt financing. However, the study findings show a need for significant new debt financing in addition to far higher outstanding debt financing than studies prior to the November 2005 Study. Accordingly, it is again recommended that the City consider the higher wastewater connection fees in the financial and economic analyses presented herein for economic cycling and higher reserves in order to minimize risk to existing wastewater ratepayers.

Wastewater Connection Fee Unit Costs. The allocation of expansion costs to collection, treatment and disposal has changed slightly towards the WRP since the November 2005 Study as previously noted. The same residential flow allocation of 180 gpd is used in this study that was first implemented via the August 2004 Study but there have been moderate changes in domestic-strength BOD and SS concentrations. Even if the City maintains the current wastewater connection fee of $4,534, the wastewater connection fee unit costs assessed customers other than single-family residential customers need to be changed to improve fee equity among the different types of new customers.

Current allocations and unit costs are presented in Table 10 for the proposed Minimum Base Fee of $5,275 and in Table 10a for the City's current fee of $4,534. Costs are allocated to collection, treatment and disposal in accordance with the capital costs shown in Table 2. Collection and disposal costs are entirely allocated to flow, and treatment costs for the City's Water Reclamation Plant are allocated to flow, BOD and SS in accordance with the facility cost allocation percentages used in the City's February 29, 2008 Comprehensive User Charge Study. Wastewater connection fee unit costs are calculated by dividing these cost allocations by 180 gpd for flow based on the City's July 2004 Master Planning, and for BOD and SS by the pounds per day used for the City's current user charge design in the City's 2008 Comprehensive User Charge Study. These wastewater connection fee unit costs when multiplied by the single-family residential wastewater discharge equals the single-family wastewater connection fee.

Use of Wastewater Connection Fee Revenue. The revenues derived from regional wastewater connection fees should continue to be deposited to the City's Sanitary Sewer Construction and Expansion Fund, Fund 241. Sewer Expansion Fund reserves should only be used to fund the costs of expansion projects for the City's wastewater management system and City direct and indirect administration costs of expansion of the wastewater system.

Wastewater Connection Fee Study Updates. It is currently estimated that the sewer connection fees escalated annually for inflation will recover adequate revenues to fund currently planned expansion projects through fiscal year 2039/40. However, there will obviously be changes over time to the many variables upon which these connection fee estimates are based and hence it is essential to regularly update this study. Normally, study updates should be conducted biennially to incorporate actual and revised projections of growth, inflation, interest income, debt financing, and construction costs and scheduling.

Table 10. Proposed Wastewater Connection Fee Unit Costs for Minimum Base Fe

Description	Equivalent Single-Family Connection Basis, gpd			
	Collection	Treatment	Disposal	Total
Single-family discharge*				
Flow, gpd	180.0	180.0	180.0	180.0
BOD, lb/day	0.456	0.456	0.456	0.456
SS, lb/day	0.451	0.451	0.451	0.451
Single-family connection fee	$948.00	$2,575.00	$1,752.00	$5,275.00
WRP facility cost allocations**				
Flow, 53.82 percent	$948.00	$1,385.87	$1,752.00	$4,085.87
BOD, 32.82 percent	$0.00	$845.12	$0.00	$845.12
SS, 13.36 percent	$0.00	$344.02	$0.00	$344.02
Nonresidential connection fee unit costs, dollars				
Flow, gpd	$5.27	$7.70	$9.73	$22.70
BOD, lb/day	$0.00	$1,853.32	$0.00	$1,853.32
SS, lb/day	$0.00	$762.79	$0.00	$762.79

Collection = 17.96%
Treatment = 48.81%
Disposal = 33.23%

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*Single-family flow of 180 gpd is from July 2004 Master Planning, and BOD SS pounds per day are from the City's February 2008 User Charge Study.

**Water Reclamation Plant facility cost allocations are from the City's February 2008 User Charge Study and allocations to collection, treatment and disposal are from Table 2 for capital costs for Prior - 2037/38.

Table 10a. Current Fee Allocation For Phasing In Minimum Base Fee

Description	Equivalent Single-Family Connection Basis, gpd			
	Collection	Treatment	Disposal	Total
Single-family discharge*				
Flow, gpd	180.0	180.0	180.0	180.0
BOD, lb/day	0.456	0.456	0.456	0.456
SS, lb/day	0.451	0.451	0.451	0.451
Single-family connection fee	$814.00	$2,213.00	$1,507.00	$4,534.00
WRP facility cost allocations**				
Flow, 53.82 percent	$814.00	$1,191.04	$1,507.00	$3,512.04
BOD, 32.82 percent	$0.00	$726.31	$0.00	$726.31
SS, 13.36 percent	$0.00	$295.66	$0.00	$295.66
Nonresidential connection fee unit costs, dollars				
Flow, gpd	$4.52	$6.62	$8.37	$19.51
BOD, lb/day	$0.00	$1,592.78	$0.00	$1,592.78
SS, lb/day	$0.00	$655.56	$0.00	$655.56

CHAPTER 3

WATER CONNECTION FEE ANALYSES

A study of City of Livermore water connection fees for expansion of potable water and recycled water services is presented in this chapter. As with the City's wastewater connection fee, the City has an established policy of financing water system expansion via a one-time charge assessed new system users at the time they connect to the City's water system.

History

The City's water connection fee policy was implemented in the mid-1970's or earlier and the water connection fee was until mid-1997 adjusted annually based on changes in the well-known 20-City Engineering News Record Construction Cost Index (ENR CCI). This Consultant completed the City's first water connection fee study in May 1997, and it was implemented shortly thereafter. The 1997 Water Connection Fee Study was based on the City's Water Master Plan completed by Camp Dresser & McKee (CDM) in March 1995, the City's Water Recycling Study of August 15, 1995 prepared by Montgomery Watson, data provided by City staff over calendar year 1996, estimates of interest income earned on reserves, expenses of debt financing, anticipated increases in construction costs, growth in water system use, and water connection fees assessed by other similar water utilities. The water connection fees developed in 1997 Study which were recommended for adoption were based on cost of service philosophy and were designed to recover anticipated costs of future water system expansion for the City's three pressure zones and for water recycling system expansion.

Prior to mid-1997, the City had single-family residential water connection fees of $1,258 for the Dalton Area, $1,794 for the Altamont Area, $1,814 for Area "A", and $1,258 for the Westside Area; the average fee was $1,531. There was a similar schedule for multiple-family customers and schedules of unit costs for each square foot for different nonresidential uses. The City implemented as recommended a uniform connection fee, which increases by meter size or in proportion to capacity rights for both potable water and recycled water services. A connection fee schedule by meter size is common practice and was then and is now used by the other Tri-Valley municipal water utilities including Zone 7, the City of Pleasanton and the Dublin San Ramon Services District. Note that Cal Water has no connection fee due to rules for private utilities, and is able to rely upon developer contributions and reimbursements. The City implemented a connection fee of $2,600 for a 5/8-inch meter for potable or recycled water services, and which was since increased by the ENR CCI for inflation and was $3,022 when the last study of August 2004 was completed. This fee was based on a thirty-year cash flow analysis and exceeded incremental costs by twenty percent due to the need for debt service to fund fifty-six percent of expansion costs due to cash flow requirements of large near-term projects being ahead of growth.

Based on the 2004 Study, the City increased its water connection fee for 5/8-inch meters from $3,022 to $3,050. The incremental cost for potable water and recycled water expansion was estimated in the August 2004 Study to be $31,340,000 for connection fee design for 12,087 DUEs, as compared to May 1997 costs of $40,300,00 and DUEs of 21,787. As with recent wastewater connection fee studies, growth projections were reduced significantly from earlier studies. The fiscal year 2004/05 fee of $3,050 escalated annually for inflation was estimated to fund all expansion costs including debt service expenses of interest and costs of bond issuance. It was estimated that there would be an ending present value fund balance of only $2.9 million compared to $7.1 million in July 2004. This fee also required two debt near-term issuances estimated with a present value of $14.4 million or 46 percent of expansion costs. The 2004 Study (plus subsequent inflation) is the basis for the City's current water connection fee of $3,694.

Water Connection Fee Philosophy

There are three methods commonly employed by water utilities to design water connection fees. These three methods include the marginal cost pricing, system buy-in, and value of service methods. Under the marginal cost pricing method connection fees are designed to derive the incremental cost of system expansion; whereas, under the system buy-in method, connection fees are designed to derive the average investment per connection, either at original (actual) cost, estimated replacement cost or estimated current value. Both of these methods base connection fees on costs. An alternative method is to base connection fees on the value of service which, in essence, is based on the fees assessed by other communities tempered by the ability of new users to pay.

In more recent years, it is required that connection fees be based on the marginal cost-pricing method; that is, there is a nexus between the fee and construction of expansion projects. The system buy-in method at historical cost, current replacement cost, and current value is still developed by this Consultant when the data is readily available for purposes of comparison to the marginal cost-pricing fee. If the system buy-in fee at current replacement cost is significantly different than the incremental cost of system expansion, it is useful to learn why and hence ensure that the marginal cost-pricing fee is reasonable and adequate. Similarly, a value-of-service analysis is not a good basis for fee design but is useful to compare for reasonableness and ensure that an agency's fees are competitive with those of other water municipal utilities.

In this study, the marginal cost-pricing and value-of-service methods of connection fee design are used. Because historical cost data is not readily available for the City at this time, and because a fee cannot be implemented based on the system buy-in method, this method is not used in this study nor was it used in prior studies.

Historical Water Expansion Costs & Connection Fees

Historical City water expansion costs and connection fees are presented in Table 11 for fiscal years 1995/96 through last fiscal year 2007/08. As shown in Table 11, the fiscal year

Table 11. Historical City of Livermore Water Expansion Cash Flow Analysis, Fiscal Years 1995/96 Through 2007/08

Description	Fiscal Year Beginning July 1 and Ending June 30, Thousands of Dollars												
	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08
Beginning Balance	2,700	2,405	2,217	2,220	3,203	4,464	5,604	6,454	7,087	7,179	6,988	5,184	5,157
Income													
Connection Fees	446	616	1,088	1,271	1,338	818	850	781	1,224	744	466	590	365
Developer Contributions					161								
Other						490							
Interest Income	133	117	99	139	189	263	234	171	211	126	110	186	143
New Debt Proceeds													
Total, Income	579	733	1,187	1,410	1,687	1,570	1,083	953	1,435	870	577	776	508
Expenses													
Water Expansion	874	921	1,184	427	426	430	389	284	1,296	766	2,180	604	3,676
Administration	0	0	0	0	0		0	0	0	0	0	0	0
Existing Debt													
2002 COPs								36	47	296	200	200	221
2007 COPs													54
Adjust to Audit							(154)						
Total, Expenses	874	921	1,184	427	426	430	234	320	1,343	1,061	2,380	804	3,951
Ending Balance	2,405	2,217	2,220	3,203	4,464	5,604	6,454	7,087	7,179	6,988	5,184	5,157	1,714
Connection Fee/DUE	1,531	2,585	2,598	2,598	2,635	2,762	2,869	2,953	3,022	3,050	3,050	3,205	3,435

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1995/96 connection fee was $1,531 and the fund balance was $2.7 million. Last fiscal year 2007/08, the connection fee was $3,435 but the fund balance had decreased to only $1.7 million due to the construction of water expansion projects.

Water Expansion Costs & Growth

A summary of the City's major water infrastructure expansion projects is presented in Table 12. There are thirteen major potable water and recycled water projects identified for construction through fiscal year 2037/38. The estimated cost is $27.5 million exclusive of debt service expenses, as compared to $31.3 million estimated in the August 2004 Study, $40.3 million estimated in the May 1997 Water Connection Fee Study exclusive of City replacement funding of $2.4 million and developer contributions of $8.4 million both contained in the May 1997 Study.

City staff direction beginning in 2004 is for analysis of the water system as whole including recycled water use. Recycled water use reduces potable water demand and associated storage and pumping expansion costs. It is also this Consultant's preference for uniform rate and fee design regardless of location because each customer adds to the economies of scale that benefits all customers. Though the costs of serving each customer will vary by location, the benefits of the economies of scale usually exceed such cost differentials due to location. It is administratively more difficult and hence expensive to maintain a multiple fee structure, and difficult for customers to understand. There needs to be extraordinary cost differentials due to location such as a high and remote location for such multiple fee structures to be practical. This change was made via implementation of the May 1997 Study that eliminated slightly different connection fees in the City's three pressure zones and established a single, uniform water connection fee.

Similarly, this uniform fee approach based on capacity rights is the same for potable water and recycled water. Capital costs of a recycled water system are expensive because they are in addition to potable water capital costs. However, a recycling system benefits all potable and recycling water customers during drought. Furthermore, if the recycled water fee exceeds the potable water fee, the use of recycled water is not promoted and hence recycled water use is less and the benefits to potable water customers during drought are less.

Based on the foregoing, uniform connection fees are designed in this 2009 study for potable water and recycled water services. In addition to the regulatory incentive requiring recycled water for certain uses, recycled water use is promoted via this uniform connection fee approach because there is no Zone 7 fee for the City's water recycling service. The water recycling connection fee is then far less than the potable water fee because of no Zone 7 water connection fee currently at $21,550 and the City's recycled water is priced at eighty percent of potable water. Finally, recycled water supply is not likely to be affected by drought.

Administrative Expenses. There are administrative expenses for expansion projects such as engineering, management, accounting, financing, and so forth. Municipal utilities have differing practices on recovery of administrative expenses with some making direct charges on a per project basis and others assessing an overhead percentage of project cost or fee revenue collected because much of such expense is an indirect cost rather than

Table 12. City of Livermore Water Expansion Capital Improvement Program Costs By Project

Capital Improvement Program Project Description	Project Number	Prior Years	Fiscal Years 2008/09 (Actual) Through 2039/40 (Projected), Current Thousands Of Dollars															
			08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24
Revenue Refund Expense	-	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Utility Master Planning-Downtown G.P.	1988-15	219	11.7	28.0	20.0	20.0	20.0	150.0	10.0	10.0	10.0	10.0	10.0	10.0	150.0	10.0	10.0	10.0
City Mapping System	1993-64	183	31.7	34.0	38.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
Cal Water Interconnect	1994-69	27	0.0	0.0	60.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aerial Map Upgrades	1997-67	17	0.0	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
WRD Recycled Water Pump	1998-51	37	915.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CDD Mapping	1998-63	14	0.0	2.8	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Potable Water Zone 2	1998-83	79	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7,330.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Zone 3 Reservoir	1998-84	2,106	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Southfront/Central Waterline Crossing	1998-85	0	0.0	0.0	0.0	0.0	0.0	1,365.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oversize Credits	2000-24	36	0.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Offices & Shops	2000-79	9	2.7	0.0	275.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Zone 1 Water System	2002-38	6,930	852.8	150.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water Irrigation Incentive Program	2006-45	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total, Water Expansion Projects	Fund 251	9,656	1,814.2	262.3	443.6	104.6	104.6	1,600.4	94.6	7,424.6	94.6	94.6	94.6	94.6	234.6	94.6	94.6	94.6
Potable Water Projects	93.2%	9,619	898.9	262.3	443.6	104.6	104.6	1,600.4	94.6	7,424.6	94.6	94.6	94.6	94.6	234.6	94.6	94.6	94.6
Recycled Water Projects	6.8%	37	915.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Capital Improvement Program Project Description	Project Number	Fiscal Year Ending June 30, Current Thousands Of Dollars															Total, 09/10-39/40
		24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36	36/37	37/38	38/39	39/40	
Revenue Refund Expense	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Utility Master Planning-Downtown G.P.	1988-15	10.0	10.0	10.0	150.0	10.0	10.0	10.0	10.0	10.0	10.0	150.0	10.0	10.0	10.0	0.0	0.0	898.0
City Mapping System	1993-64	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	0.0	0.0	990.0
Cal Water Interconnect	1994-69	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.0
Aerial Map Upgrades	1997-67	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	0.0	0.0	797.5
WRD Recycled Water Pump	1998-51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CDD Mapping	1998-63	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	0.0	89.6
Potable Water Zone 2	1998-83	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7,330.0
Zone 3 Reservoir	1998-84	0.0	10,900.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10,900.0
Southfront/Central Waterline Crossing	1998-85	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,365.8
Oversize Credits	2000-24	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	580.0
Offices & Shops	2000-79	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	275.0
Zone 1 Water System	2002-38	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	150.0
Water Irrigation Incentive Program	2006-45	0.0	0.0	0.0	0.0	349.4	521.9	506.7	491.9	477.6	463.7	450.2	437.1	381.9	0.0	0.0	0.0	4,080.4
Total, Water Expansion Projects	Fund 251	94.6	10,994.6	94.6	234.6	444.0	616.5	601.3	586.5	572.2	558.3	684.8	531.7	476.5	94.6	0.0	0.0	27,516.3
Potable Water Projects	93.2%	94.6	10,994.6	94.6	234.6	94.6	94.6	94.6	94.6	94.6	94.6	234.6	94.6	94.6	94.6	0.0	0.0	23,435.9
Recycled Water Projects	6.8%	0.0	0.0	0.0	0.0	349.4	521.9	506.7	491.9	477.6	463.7	450.2	437.1	381.9	0.0	0.0	0.0	4,080.4

Costs are for November 9, 2009 at an ENR CCI (9719.42 .

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specifically tracked to each project. In this study, administrative expenses are included in the estimated costs for each project.

Water Growth Projections. Consultant and City staff analyzed historical single-family residential use in the 2004 Study and found it to be 414 gallons per day (gpd), as compared to 417.24 gpd used in the May 1997 Water Connection Fee Study. This Consultant found single-family average water use to be 409 gpd in the February 28, 2008 Water Rate Study, and 401 gpd, 387 gpd, 410 gpd, 441 gpd, 419 gpd in the prior water rate studies for a six-year average of 411.17 gpd. This is similar to past estimates for Zone 7, DSRSD and Pleasanton. In this 2009 Study, 414 gpd continues to be assigned to a 5/8-inch meter and is termed a dwelling unit equivalent (DUE). Existing potable water use is estimated to be 6.48 million gallons per day (mgd) as compared to 5.14 mgd in the August 2004 Water Connection Fee Study and 3.43 mgd in the May 1997 Water Connection Fee Study.

City staff provided ultimate design growth per master planning of 14.207 mgd, including 11.0500 mgd of potable water demand and 2.9707 mgd of recycled water demand. City staff also provided the growth projections that are shown in Table 13 as new DUEs and new water demand for both potable water and recycled water services. Total water demand is also shown in Table 13 for both water services. Near-term growth projections are lower than prior studies due to the current economic slowdown and increase after five years beginning in fiscal year 2014/15. Projected potable water growth is 8,739 DUEs, and projected recycled water growth is 3,032 DUEs. City staff estimates that there are currently 2,511 DUEs sold but not yet connected to the City's water system.

Also shown in Table 13 are actual and estimated rates of inflation and interest that are later used in long-term cash flow analyses. Except for current economic conditions being applicable to the near-term, this Consultant is assuming for the long-term inflation of 3.0 percent annually and interest income of 5.5 percent or the historical rate of 2.5 percent greater than estimated inflation,

Water Connection Fee Development

As previously discussed, connection fee analyses in this study use the marginal cost-pricing and value-of-service methods. Two variations of the marginal cost-pricing method are used, including incremental costs per DUE and long-term cash flow analyses.

Incremental Water Expansion Cost Analysis. The marginal cost-pricing method using incremental expansion costs and growth simply identifies the incremental cost per DUE without regard to the timing of growth and construction, interest income earned on reserves, debt service expense, and future inflation. The incremental cost is estimated in Table 12 to be $27,516,000 (exclusive of costs from prior years) for water connection fee design for 11,771 DUEs, as compared $31,340,000 for water connection fee design for 12,087 DUEs and May 1997 costs of $40,300,000 and DUEs of 21,787. These data show an estimated incremental cost of $2,338/DUE exclusive of debt service expenses as compared to the City's current average water connection fee of $3,477/DUE, the August 2004 estimate of $2,593/DUE, and May 1997 Study estimate of $1,850/DUE.

Table 13. Actual and Estimated Rates of Inflation, Interest & Growth Used for Study Projections

Fiscal	Rate, Percent		Growth, DUEs			New Demand, mgd			Potable AVG & Recycled Seasonal, mgd		
Year	Inflation	Interest	Potable	Recycled	Total	Potable	Recycled	Total	Potable	Recycled	Total
Actual											
1995/96	0.4%	1.3%			291						
1996/97	-0.1%	1.3%			238						
1997/98	2.6%	1.1%			419						
1998/99	1.9%	1.3%			489						
1999/00	4.4%	1.2%			508						
2000/01	0.1%	1.3%			296						
2001/02	2.0%	1.0%			265						
2002/03	3.1%	0.6%			383						
2003/04	1.3%	0.7%			905						
2004/05	5.6%	0.4%			244						
2005/06	2.8%	0.5%			153						
2006/07	7.6%	0.9%			184						
2007/08	0.3%	1.0%	106.34		106	0.0440	0.0000	0.0440	6.478948	1.616400	8.095348
2008/09	6.4%	0.6%	19.46	0.00	19.46	0.0081	0.0000	0.0058	6.5230	1.6164	8.1394
Projected											
2009/10	3.0%	3.0%	50.00	16.67	66.67	0.0207	0.0069	0.0276	6.5310	1.6164	8.1474
2010/11	3.0%	5.0%	50.00	16.67	66.67	0.0207	0.0069	0.0276	6.5517	1.6233	8.1750
2011/12	3.0%	5.5%	50.00	16.67	66.67	0.0207	0.0069	0.0276	6.5724	1.6302	8.2026
2012/13	3.0%	5.5%	50.00	16.67	66.67	0.0207	0.0069	0.0276	6.5931	1.6371	8.2302
2013/14	3.0%	5.5%	110.00	52.99	162.99	0.0455	0.0219	0.0675	6.6138	1.6440	8.2578
2014/15	3.0%	5.5%	200.00	57.98	257.98	0.0828	0.0240	0.1068	6.6594	1.6659	8.3253
2015/16	3.0%	5.5%	235.00	117.98	352.98	0.0973	0.0488	0.1461	6.7422	1.6899	8.4321
2016/17	3.0%	5.5%	235.00	117.98	352.98	0.0973	0.0488	0.1461	6.8395	1.7388	8.5782
2017/18	3.0%	5.5%	235.00	117.98	352.98	0.0973	0.0488	0.1461	6.9367	1.7876	8.7244
2018/19	3.0%	5.5%	235.00	117.98	352.98	0.0973	0.0488	0.1461	7.0340	1.8365	8.8705
2019/20	3.0%	5.5%	235.00	117.98	352.98	0.0973	0.0488	0.1461	7.1313	1.8853	9.0166
2020/21	3.0%	5.5%	235.00	117.98	352.98	0.0973	0.0488	0.1461	7.2286	1.9342	9.1628
2021/22	3.0%	5.5%	235.00	117.98	352.98	0.0973	0.0488	0.1461	7.3259	1.9830	9.3089
2022/23	3.0%	5.5%	235.00	117.98	352.98	0.0973	0.0488	0.1461	7.4232	2.0318	9.4550
2023/24	3.0%	5.5%	235.00	117.98	352.98	0.0973	0.0488	0.1461	7.5205	2.0807	9.6012
2024/25	3.0%	5.5%	235.00	117.98	352.98	0.0973	0.0488	0.1461	7.6178	2.1295	9.7473
2025/26	3.0%	5.5%	235.00	117.98	352.98	0.0973	0.0488	0.1461	7.7151	2.1784	9.8934
2026/27	3.0%	5.5%	235.00	117.98	352.98	0.0973	0.0488	0.1461	7.8124	2.2272	10.0396
2027/28	3.0%	5.5%	235.00	117.98	352.98	0.0973	0.0488	0.1461	7.9096	2.2760	10.1857
2028/29	3.0%	5.5%	235.00	117.98	352.98	0.0973	0.0488	0.1461	8.0069	2.3249	10.3318
2029/30	3.0%	5.5%	235.00	117.98	352.98	0.0973	0.0488	0.1461	8.1042	2.3737	10.4780
2030/31	3.0%	5.5%	235.00	117.98	352.98	0.0973	0.0488	0.1461	8.2015	2.4226	10.6241
2031/32	3.0%	5.5%	235.00	117.98	352.98	0.0973	0.0488	0.1461	8.2988	2.4714	10.7702
2032/33	3.0%	5.5%	235.00	117.98	352.98	0.0973	0.0488	0.1461	8.3961	2.5203	10.9164
2033/34	3.0%	5.5%	800.00	126.92	926.92	0.3312	0.0525	0.3837	8.4934	2.5691	11.0625
2034/35	3.0%	5.5%	800.00	126.92	926.92	0.3312	0.0525	0.3837	8.8246	2.6216	11.4462
2035/36	3.0%	5.5%	800.00	126.92	926.92	0.3312	0.0525	0.3837	9.1558	2.6742	11.8300
2036/37	3.0%	5.5%	800.00	126.92	926.92	0.3312	0.0525	0.3837	9.4870	2.7267	12.2137
2037/38	3.0%	5.5%	799.00	223.33	1,022.33	0.3308	0.0925	0.4232	9.8182	2.7793	12.5975
2038/39	3.0%	5.5%	0.00	0.00	0.00	0.0000	0.0000	0.0000	10.1490	2.8717	13.0207
2039/40	3.0%	5.5%	0.00	0.00	0.00	0.0000	0.0000	0.0000	10.1490	2.8717	13.0207
Permits sold but not connected			2,181.79	233.67	2,511.00	0.9033	0.0967	1.0000	10.1490	2.8717	13.0207
Total Fee Study Build-Out									11.0522	2.9685	14.0207
Total Build-Out Per Master Plans									11.0500	2.9707	14.0207

Existing single-family residential use 414.00 gallons per day is used to define dwelling unit equivalents (DUE's). Revised 11-Mar-10

Long-Term Water Expansion Cash Flow Analysis. A long-term cash flow analysis is a much more sophisticated and relatively new means of connection fee design. It also assists the City with other elements of expansion planning such as planning for when debt financing may be needed.

As previously discussed, expansion costs and construction scheduling for projects to be funded by the City are estimated in Table 12. As also previously discussed, rates of growth, interest income and inflation are shown in Table 13. New debt issuances are based on assumptions of 6.0 percent interest, 2 fee points, 9 reserve points, and a term of 30 years. It is important to note that the key assumption is not the rate of inflation or interest but rather interest earnings at the historical real rate of interest of 2 to 3 percent greater than inflation. Also note that all debt service payments are shown to be made within the thirty-year study period though in reality the debt service shown for the last fiscal year 2039/40 contains debt payments beyond fiscal year 2039/40. The purpose is to design connection fees that are adequate to fund all estimated expansion costs including debt service.

Proposed Water Minimum Base Fee Cash Flow Analysis. A proposed Minimum Base Fee cash flow analysis for the City's Potable and Recycled Water Expansion Fund is presented in Table 14 for the next thirty fiscal years through 2039/40. This analysis is designed to minimize debt financing and have a minimal ending fund balance after funding all costs of expansion projects and debt financing over the next thirty years. As shown in Table 14, the beginning fund balance as of July 1, 2008 is $1.7 million and the ending fund balance is a present value $0.4 million as of June 30, 2040. As shown in Table 14, this analysis assumes a fiscal year 2009/10 connection fee decrease from $3,694 to $3,500 escalated annually thereafter for inflation through fiscal year 2039/40. This analysis also assumes new debt financings of $21.5 million in addition to outstanding debt service payments totaling $7.3 million. There are many assumptions in this analysis as previously discussed including 414 gpd/DUE. This fee of $3,500 contains no allowance for economic cycling modeling or minimum reserves of two years debt service and maximum reserves of five years debt service.

Phasing In Minimum Base Fee. Due to the current economic slow down, City staff requested an analysis that maintains current fees over next fiscal year 2009/10 and then phases in the Proposed Minimum Base Fee over the following four fiscal years at twenty-five percent per year of the minimum increase needed. This is shown below, and is presented in Table 14a. The affect is nearly the same ending present value fund balances because the fees are nearly the same.

Fiscal Year	09/10	10/11	11/12	12/13	13/14
Minimum Fee	$3,500	$3,605	$3,715	$3,825	$3,940
Phasing Increase					
Percent Increase	0%	25%	50%	75%	100%
Phasing Fee	$3,694	$3,670	$3,705	$3,790	$3,940
Fee Increase	$0	-$24	$35	$85	$150
Current $ Phasing	$3,694	$3,565	$3,490	$3,470	$3,500
Increase	$0	-$129	-$75	-$20	$30
Alternate Phasing					
Current $ Phasing*	$3,694	$3,646	$3,597	$3,549	$3,500
Increase	$0	-$49	-$49	-$49	-$49

Table 14. Minimum Base Fee: City of Livermore Long-Term Potable & Recycled Water Expansion Cash Flow Analysis For Fiscal Years 2008/09 - 2039/40

Description	Fiscal Year Beginning July 1 and Ending June 30, Actual 08/09 $ & Escalated Thousands Of Dollars Thereafter															
	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24
Beginning Balance	1,713.7	3,050	2,508	1,794	1,426	3,096	1,250	1,510	2,204	2,248	2,736	3,296	3,932	4,444	5,238	6,126
	Analysis With 4-Year Economic Cycling at 100% . Maximum fund balance is 5 years debt service at $11.3 million.															
Income	Minimum fund balance is 2 years debt service at $4.5 million.															
Connection Fees	67.7	233	240	248	255	642	1,047	1,475	1,520	1,565	1,613	1,661	1,710	1,761	1,814	1,869
Developer Contribs																
Other																
Interest	57.8	82	105	86	121	116	74	99	119	133	161	193	224	259	304	354
New Debt Proceeds	3,613.2				2,000			9,000								
Total, Income	3,738.7	315	345	334	2,376	759	1,121	10,575	1,639	1,699	1,775	1,854	1,934	2,020	2,118	2,223
Expenses																
Water Expansion	1,814.2	270	471	114	118	1,855	113	9,131	120	123	127	131	334	139	143	147
Administration	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Developer Reimburse																
Existing Debt																
2002 COPs	200.4	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
2007 COPs	387.5	388	388	388	388	388	388	388	388							
New Debt																
Debt #1 Payments						161	161	161	161	161	161	161	161	161	161	161
Debt #2 Payments									726	726	726	726	726	726	726	726
Debt #3 Payments																
Total, Expenses	2,402.2	858	1,059	702	706	2,604	862	9,881	1,595	1,211	1,215	1,218	1,422	1,226	1,231	1,235
Ending Balance	3,050.3	2,508	1,794	1,426	3,096	1,250	1,510	2,204	2,248	2,736	3,296	3,932	4,444	5,238	6,126	7,115
Connection Fee/DUE	3,477.0	3,500	3,605	3,715	3,825	3,940	4,060	4,180	4,305	4,435	4,570	4,705	4,845	4,990	5,140	5,295

Description	Fiscal Year Beginning July 1 and Ending June 30, Escalated Thousands Of Dollars															
	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36	36/37	37/38	38/39	39/40
Beginning Balance	7,115	8,211	8,379	8,248	8,123	7,654	6,872	6,111	5,373	4,662	8,178	11,776	16,086	20,940	27,962	27,180
Income																
Connection Fees	1,925	1,984	2,044	2,105	2,169	2,234	2,301	2,370	2,441	6,600	6,799	7,003	7,211	8,194	0	0
Developer Contribs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest	410	444	445	438	422	389	347	307	269	344	534	746	991	1,309	1,476	759
New Debt Proceeds	0	17,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total, Income	2,336	19,428	2,489	2,544	2,591	2,623	2,649	2,678	2,709	6,943	7,333	7,749	8,202	9,503	1,476	759
Expenses																
Water Expansion	152	18,172	161	411	802	1,147	1,152	1,158	1,163	1,169	1,477	1,181	1,090	223	0	0
Administration	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Developer Reimburse	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Debt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002 COPs	200	200	200	0	0	0	0	0	0	0	0	0	0	0	0	0
2007 COPs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Debt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Debt #1 Payments	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	484
Debt #2 Payments	726	726	726	726	726	726	726	726	726	726	726	726	726	726	726	4,355
Debt #3 Payments	0	0	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	21,934
Total, Expenses	1,239	19,260	2,619	2,669	3,060	3,405	3,410	3,415	3,421	3,427	3,735	3,439	3,348	2,481	2,258	26,773
Ending Balance	8,211	8,379	8,248	8,123	7,654	6,872	6,111	5,373	4,662	8,178	11,776	16,086	20,940	27,962	27,180	1,166
Connection Fee/DUE	5,455	5,620	5,790	5,965	6,145	6,330	6,520	6,715	6,915	7,120	7,335	7,555	7,780	8,015	8,255	8,505

Beginning 2009/10 cash is $3.1 million and the present value ending cash balance is estimated at $0.5 million.

The fiscal year 2009/10 connection fee is $3,500 .

Present value of new debt required is $19.4 million of bond proceeds or bond issues of $21.5 million.

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Table 14a. Phasing In Minimum Base Fee: City of Livermore Long-Term Potable & Recycled Water Expansion Cash Flow Analysis to Fiscal Year 2039/40

Description	Fiscal Year Beginning July 1 and Ending June 30, Actual 08/09 $ & Escalated Thousands Of Dollars Thereafter															
	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24
Beginning Balance	1,713.7	3,050	2,521	1,813	1,445	3,114	1,269	1,529	2,224	2,269	2,758	3,319	3,957	4,470	5,266	6,155
	Analysis With 4-Year Economic Cycling at 100% . Maximum fund balance is 5 years debt service at $11.3 million.															
Income	Minimum fund balance is 2 years debt service at $4.5 million.															
Connection Fees	67.7	246	245	247	253	642	1,047	1,475	1,520	1,565	1,613	1,661	1,710	1,761	1,814	1,869
Developer Contribs																
Other																
Interest	57.8	82	106	87	122	117	75	100	120	135	163	195	226	261	306	356
New Debt Proceeds	3,613.2				2,000			9,000								
Total, Income	3,738.7	329	350	334	2,375	759	1,122	10,576	1,640	1,700	1,776	1,855	1,936	2,022	2,120	2,225
Expenses																
Water Expansion	1,814.2	270	471	114	118	1,855	113	9,131	120	123	127	131	334	139	143	147
Administration	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Developer Reimburse																
Existing Debt																
2002 COPs	200.4	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
2007 COPs	387.5	388	388	388	388	388	388	388	388							
New Debt																
Debt #1 Payments						161	161	161	161	161	161	161	161	161	161	161
Debt #2 Payments									726	726	726	726	726	726	726	726
Debt #3 Payments																
Total, Expenses	2,402.2	858	1,059	702	706	2,604	862	9,881	1,595	1,211	1,215	1,218	1,422	1,226	1,231	1,235
Ending Balance	3,050.3	2,521	1,813	1,445	3,114	1,269	1,529	2,224	2,269	2,758	3,319	3,957	4,470	5,266	6,155	7,146
Connection Fee/DUE	3,477	3,694	3,670	3,705	3,790	3,940	4,060	4,180	4,305	4,435	4,570	4,705	4,845	4,990	5,140	5,295

Description	Fiscal Year Beginning July 1 and Ending June 30, Escalated Thousands Of Dollars															
	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36	36/37	37/38	38/39	39/40
Beginning Balance	7,146	8,244	8,413	8,285	8,161	7,695	6,915	6,156	5,421	4,712	8,231	11,832	16,145	21,002	28,028	27,249
Income																
Connection Fees	1,925	1,984	2,044	2,105	2,169	2,234	2,301	2,370	2,441	6,600	6,799	7,003	7,211	8,194	0	0
Developer Contribs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest	412	446	447	440	424	391	350	310	271	346	537	749	994	1,312	1,479	762
New Debt Proceeds	0	17,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total, Income	2,337	19,430	2,491	2,546	2,593	2,625	2,651	2,680	2,712	6,946	7,336	7,752	8,206	9,506	1,479	762
Expenses																
Water Expansion	152	18,172	161	411	802	1,147	1,152	1,158	1,163	1,169	1,477	1,181	1,090	223	0	0
Administration	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Developer Reimburse	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Debt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002 COPs	200	200	200	0	0	0	0	0	0	0	0	0	0	0	0	0
2007 COPs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Debt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Debt #1 Payments	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	484
Debt #2 Payments	726	726	726	726	726	726	726	726	726	726	726	726	726	726	726	4,355
Debt #3 Payments	0	0	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	21,934
Total, Expenses	1,239	19,260	2,619	2,669	3,060	3,405	3,410	3,415	3,421	3,427	3,735	3,439	3,348	2,481	2,258	26,773
Ending Balance	8,244	8,413	8,285	8,161	7,695	6,915	6,156	5,421	4,712	8,231	11,832	16,145	21,002	28,028	27,249	1,239
Connection Fee/DUE	5,455	5,620	5,790	5,965	6,145	6,330	6,520	6,715	6,915	7,120	7,335	7,555	7,780	8,015	8,255	8,505

Beginning 2009/10 cash is $3.1 million and the present value ending cash balance is estimated at $0.5 million.
The fiscal year 2009/10 connection fee is $3,500 .
Present value of new debt required is $19.4 million of bond proceeds or bond issues of $21.5 million.
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Economic Cycling. The concept of economic cycling was described in Chapter 2 for the wastewater expansion cash flow analyses and is presented in Table 15 for expansion of the City's water facilities. The affects of economic cycling are higher debt estimates and higher water connection fee estimates. The question for the City will be whether some contingencies should be provided in water connection fee design if actual growth is slower or less than growth projections made now. As shown in Table 15, the Minimum Base water connection fee of $3,500 developed in Table 14 increases to $3,685, for an increase of $185. Furthermore, estimated new debt financing increases from a present value of $21.5 million to $25.2 million due to delays in the receipt of connection fee revenue. Note that the Minimum Base Fee and Economic Cycling alternatives have the same ending present value fund balances at $0.5 million.

Minimum & Maximum Reserves. A thirty-year water expansion cash flow analysis with Economic Cycling with Minimum & Maximum Reserves is presented in Table 16. As shown in Table 16, the water connection fee increases to $4,500 with Minimum & Maximum Reserves, as compared to the Minimum Base Fee of $3,500 and $3,685 with Economic Cycling. This is a significant increase of $1,000 over the Minimum Base Fee or 29 percent as compared to 36 percent for wastewater expansion. Again, note that this is a question for the City as to what level of reserves should be held to be able to pay debt service if growth slows without the use of revenue from existing ratepayers.

Value-of-Service Analysis. The value of service analysis shown in Table 17 is based on surveys conducted in July 1983, April 1984, June 1985, May 1986, June1987, May1988, May 1989, April1990, April 1991, April 1992, March 1995, January1998, March1999, September 2000, September 2002, August 2004, and October 2008. Note that many of these other agencies may also increase their water connection fees over the next fiscal year 2009/10. Further note that the connection fees for DSRSD and the cities of Livermore and Pleasanton include Zone 7 connection fees and this Consultant has designed connection fees for all four of these agencies. As shown in Table 17, connection fees for 12 service areas range from $5,064 in the City of Fairfield to $29,877 for the Dougherty Valley.

As noted in Table 17, the City of Martinez has five zones with surcharges that cause the highest fee to be $15,343 per residential service. EBMUD also has a number of different fee zones with a fee of $24,990 for the San Ramon Valley. Pleasanton has a lower fee in the North Pleasanton Improvement District (NPID) due to significant developer contributions. Livermore has a uniform fee for three pressure zones and for potable and recycled water services; previously Livermore had three water connection fees for three pressure zones and had not studied a recycled water connection fee. DSRSD has had zones for some years now but a uniform fee for each zone though developer contributions for Zone 3 are estimated to be $4,100 exclusive of the base connection fee that was then $2,200 to $2,850. DSRSD now has the same connection fee for either potable or recycled water service, but a higher fee for Dougherty Valley than for the City of Dublin ($28,129 vs. $29,877). These various zone surcharges and developer contributions are not contained in the fees shown in Table 17.

Table 15. Economic Cycling: City of Livermore Long-Term Potable & Recycled Water Expansion Cash Flow AnalysisFor Fiscal Years 2008/09 - 2039/40

Description	Fiscal Year Beginning July 1 and Ending June 30, Actual 08/09 $ & Escalated Thousands Of Dollars Thereafter															
	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24
Beginning Balance	1,713.7	3,006	2,313	1,434	885	3,619	1,938	2,398	6,417	5,375	4,687	3,975	3,239	4,676	6,487	8,488
	Analysis With 4-Year Economic Cycling at 35% . Maximum fund balance is 5 years debt service at $12.9 million.															
Income	Minimum fund balance is 2 years debt service at $5.2 million.															
Connection Fees	23.7	86	89	91	319	855	1,287	1,744	560	576	594	612	2,970	3,061	3,154	3,247
Developer Contribs																
Other																
Interest	57.8	79	91	62	121	149	116	236	316	269	232	193	212	299	401	513
New Debt Proceeds	3,613.2				3,000			12,000								
Total, Income	3,694.7	165	180	153	3,440	1,004	1,403	13,980	875	846	825	805	3,182	3,359	3,555	3,760
Expenses																
Water Expansion	1,814.2	270	471	114	118	1,855	113	9,131	120	123	127	131	334	139	143	147
Administration	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Developer Reimburse																
Existing Debt																
2002 COPs	200.4	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
2007 COPs	387.5	388	388	388	388	388	388	388	388							
New Debt																
Debt #1 Payments						242	242	242	242	242	242	242	242	242	242	242
Debt #2 Payments									968	968	968	968	968	968	968	968
Debt #3 Payments																
Total, Expenses	2,402.2	858	1,059	702	706	2,685	943	9,961	1,917	1,533	1,537	1,541	1,744	1,549	1,553	1,557
Ending Balance	3,006.3	2,313	1,434	885	3,619	1,938	2,398	6,417	5,375	4,687	3,975	3,239	4,676	6,487	8,488	10,691
Connection Fee/DUE	3,477	3,685	3,795	3,910	4,025	4,145	4,270	4,400	4,530	4,665	4,805	4,950	5,100	5,255	5,415	5,575

Description	Fiscal Year Beginning July 1 and Ending June 30, Escalated Thousands Of Dollars															
	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36	36/37	37/38	38/39	39/40
Beginning Balance	10,691	10,403	9,072	7,321	5,445	6,135	6,625	7,256	8,040	5,558	4,508	3,159	2,116	8,185	19,829	23,645
Income																
Connection Fees	709	730	752	775	3,762	3,876	3,992	4,112	898	2,430	2,503	2,578	9,465	13,697	5,233	5,389
Developer Contribs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest	565	521	439	342	310	342	372	409	364	269	205	141	276	750	1,164	666
New Debt Proceeds	0	17,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total, Income	1,274	18,251	1,190	1,116	4,072	4,217	4,364	4,521	1,262	2,699	2,708	2,719	9,740	14,447	6,396	6,055
Expenses																
Water Expansion	152	18,172	161	411	802	1,147	1,152	1,158	1,163	1,169	1,477	1,181	1,090	223	0	0
Administration	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Developer Reimburse	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Debt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002 COPs	200	200	200	0	0	0	0	0	0	0	0	0	0	0	0	0
2007 COPs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Debt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Debt #1 Payments	242	242	242	242	242	242	242	242	242	242	242	242	242	242	242	726
Debt #2 Payments	968	968	968	968	968	968	968	968	968	968	968	968	968	968	968	5,806
Debt #3 Payments	0	0	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	21,934
Total, Expenses	1,562	19,582	2,942	2,992	3,382	3,727	3,733	3,738	3,744	3,749	4,057	3,762	3,671	2,803	2,580	28,466
Ending Balance	10,403	9,072	7,321	5,445	6,135	6,625	7,256	8,040	5,558	4,508	3,159	2,116	8,185	19,829	23,645	1,234
Connection Fee/DUE	5,740	5,910	6,085	6,270	6,460	6,655	6,855	7,060	7,270	7,490	7,715	7,945	8,185	8,430	8,685	8,945

Beginning 2009/10 cash is $3.0 million and the present value ending cash balance is estimated at $0.5 million.

The fiscal year 2009/10 connection fee is $3,685 .

Present value of new debt required is $22.7 million of bond proceeds or bond issues of $25.2 million.

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Table 16. Economic Cycling and Minimum & Maximum Reserves: City of Livermore Long-Term Water Expansion Cash Flow Analysis For FYs 2008/09 - 2039/40

Description	Fiscal Year Beginning July 1 and Ending June 30, Actual 08/09 $ & Escalated Thousands Of Dollars Thereafter															
	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24
Beginning Balance	1,713.7	3,006	2,332	1,475	949	3,759	2,282	3,055	7,506	6,652	6,166	5,670	5,166	7,383	10,034	12,939
	Analysis With 4-Year Economic Cycling at 35% . Maximum fund balance is 5 years debt service at $12.9 million. Minimum fund balance is 2 years debt service at $5.2 million.															
Income																
Connection Fees	23.7	105	108	111	390	1,046	1,573	2,130	684	704	725	747	3,625	3,733	3,844	3,960
Developer Contribs																
Other																
Interest	57.8	79	93	65	126	162	143	283	379	343	317	290	336	466	615	778
New Debt Proceeds	3,613.2				3,000			12,000								
Total, Income	3,694.7	184	201	176	3,516	1,208	1,716	14,413	1,063	1,047	1,042	1,037	3,961	4,199	4,459	4,738
Expenses																
Water Expansion	1,814.2	270	471	114	118	1,855	113	9,131	120	123	127	131	334	139	143	147
Administration	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Developer Reimburse																
Existing Debt																
2002 COPs	200.4	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
2007 COPs	387.5	388	388	388	388	388	388	388	388							
New Debt																
Debt #1 Payments						242	242	242	242	242	242	242	242	242	242	242
Debt #2 Payments									968	968	968	968	968	968	968	968
Debt #3 Payments																
Total, Expenses	2,402.2	858	1,059	702	706	2,685	943	9,961	1,917	1,533	1,537	1,541	1,744	1,549	1,553	1,557
Ending Balance	3,006.3	2,332	1,475	949	3,759	2,282	3,055	7,506	6,652	6,166	5,670	5,166	7,383	10,034	12,939	16,120
Connection Fee/DUE	3,477	4,500	4,635	4,775	4,920	5,070	5,220	5,375	5,535	5,700	5,870	6,045	6,225	6,410	6,600	6,800

Description	Fiscal Year Beginning July 1 and Ending June 30, Escalated Thousands Of Dollars															
	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36	36/37	37/38	38/39	39/40
Beginning Balance	16,120	16,291	15,450	14,220	12,900	14,852	16,698	18,787	21,135	19,578	19,849	19,910	20,372	29,584	45,502	51,912
Income																
Connection Fees	865	891	918	946	4,592	4,729	4,872	5,017	1,096	2,965	3,054	3,145	11,546	16,711	6,383	6,576
Developer Contribs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest	867	850	794	726	743	844	950	1,068	1,090	1,055	1,064	1,078	1,337	2,010	2,607	2,253
New Debt Proceeds	0	17,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total, Income	1,733	18,741	1,712	1,672	5,335	5,574	5,822	6,086	2,186	4,020	4,119	4,223	12,883	18,721	8,991	8,829
Expenses																
Water Expansion	152	18,172	161	411	802	1,147	1,152	1,158	1,163	1,169	1,477	1,181	1,090	223	0	0
Administration	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Developer Reimburse	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Debt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2002 COPs	200	200	200	0	0	0	0	0	0	0	0	0	0	0	0	0
2007 COPs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Debt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Debt #1 Payments	242	242	242	242	242	242	242	242	242	242	242	242	242	242	242	726
Debt #2 Payments	968	968	968	968	968	968	968	968	968	968	968	968	968	968	968	5,806
Debt #3 Payments	0	0	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	1,371	21,934
Total, Expenses	1,562	19,582	2,942	2,992	3,382	3,727	3,733	3,738	3,744	3,749	4,057	3,762	3,671	2,803	2,580	28,466
Ending Balance	16,291	15,450	14,220	12,900	14,852	16,698	18,787	21,135	19,578	19,849	19,910	20,372	29,584	45,502	51,912	32,275
Connection Fee/DUE	7,005	7,215	7,430	7,655	7,885	8,120	8,365	8,615	8,875	9,140	9,415	9,695	9,985	10,285	10,595	10,915

Beginning 2009/10 cash is $3.0 million and the present value ending cash balance is estimated at $12.9 million.

The fiscal year 2009/10 connection fee is $4,500 .

Present value of new debt required is $22.7 million of bond proceeds or bond issues of $25.2 million.

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Table 17. Past and Current Water Connection Fees of Other Communities Near the City of Livermore

Municipal Water Utility	Fiscal Year, Dollars																	Average Annual Increase
	83/84	84/85	85/86	86/87	87/88	88/89	89/90	90/91	91/92	92/93	94/95	97/98	98/99	00/01	02/03	04/05	08/09	
City of Antioch	1,035	1,050	1,085	1,110	1,150	1,175	1,208	1,208	1,208	2,733	2,911	5,221	6,742	8,168	8,237	9,020	9,228	9%
Contra Costa Water	910	910	910	910	910	910	1,800	3,500	3,500	5,430	7,140	10,500	12,700	13,340	13,340	14,594	20,090	13%
DSRSD**																		
City of Dublin	1,885	2,030	2,030	2,030	2,030	2,130	2,480	2,480	2,590	3,030	5,250	6,445	10,115	14,100	15,500	15,800	28,129	11%
Dougherty Valley														13,275	15,300	15,580	29,877	11%
East Bay M.U.D.																		
City of Oakland*	200	200	200	200	220	650	785	1,045	1,090	1,340	2,095	1,440	1,640	1,820	2,850	3,090	8,110	16%
City of San Ramon	3,500	3,500	3,500	3,500	3,860	4,520	5,020	6,260	6,720	7,470	8,380	8,560	9,980	14,900	22,100	24,300	24,990	8%
City of Fairfield*	1,600	1,640	1,617	1,619	1,765	1,837	2,267	2,346	2,395	3,400	3,669	3,684	3,735	3,783	4,106	4,322	5,064	5%
City of Livermore****	1,372	1,393	1,401	1,406	1,425	1,441	1,455	1,471	1,483	1,961	5,250	6,180	7,513	11,885	13,253	13,650	25,340	12%
City of Martinez*	1,200	1,264	1,300	1,300	1,300	1,300	1,300	1,300	1,535	3,500	5,390	8,100	9,113	9,313	9,513	9,760	10,768	9%
City of Pittsburg	400	400	600	600	600	600	600	600	600	2,050	2,090	4,400	4,813	4,813	4,869	5,116	7,220	12%
City of Pleasanton***	1,115	1,115	1,165	1,165	1,165	1,312	1,346	1,380	1,380	2,030	4,250	4,795	6,115	10,450	11,500	11,800	22,750	13%
Average w/o Oakland	1,446	1,478	1,512	1,516	1,578	1,692	1,942	2,283	2,379	3,512	4,926	6,432	7,870	10,084	11,380	12,040	17,064	10%
Alameda County Water District												4,779	4,860	4,860	4,860	5,103	5,546	3%
Average with ACWD but not Oakland												6,963	8,410	10,624	11,920	12,607	17,681	17%
Zone 7 Water Agency																		
Dougherty Valley														7,475	9,500	9,780	22,634	15%
All Other	830	830	830	830	830	830	830	830	830	830	3,050	3,595	4,915	9,250	10,300	10,600	21,550	14%
Proposed Connection Fee																09/10 Proposed		
City of Livermore	542	563	571	576	595	611	625	641	653	1,131	2,200	2,585	2,598	2,635	2,953	3,050	3,500	8%
Zone 7 Water Agency	830	830	830	830	830	830	830	830	830	830	3,050	3,595	4,915	9,250	10,300	10,600	21,550	14%
Total Connection Fee	1,372	1,393	1,401	1,406	1,425	1,441	1,455	1,471	1,483	1,961	5,250	6,180	7,513	11,885	13,253	13,650	25,050	12%

*Zone surcharges increase some fees to $13,886 for Martinez and $11,770 in Oakland hills.

Martinez has a additional fee for residential fire sprinkler service that increases the base fee to $15,343.

**DSRSD fees do not include Zone 3 developer contributions.

***Pleasanton fees include Zone 7 fees but not NPID developer contributions.

****Cal Cities Water in Livermore has no connection fee except the Zone 7 fees.

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There was little change in the water connection fees assessed by these agencies until recent years when most of these agencies implemented more significant increases presumably in response to growth and the last drought at the start of the 1990s and the ever-increasing costs of obtaining a larger water supply. The average connection fee exclusive of the low fee for the City of Oakland increased from $1,446 in 1983 to $17,064 today, which is an average annual increase of 10 percent over these twenty-six years. During this same period, the City's connection fee inclusive of the Zone 7 Water Agency's connection fee increased from $1,372 to $25,244 that is an average annual increase of 12 percent over twenty-six years. The connection fee of $3,500 proposed for the City exclusive of the Zone 7 fees is an average annual increase of 8 percent over these twenty-six years which is significantly less than the other water utilities.

As shown in Table 17, the water connection fee proposed for the City of Livermore inclusive of the Zone 7 water connection fee of $25,050 for the Minimum Base Fee and $25,000 for Phasing are both less than EBMUD's water connection fee of $24,990 for the San Ramon Valley and DSRSD and Zone 7's fees of $28,129 for Dublin and $29,877 for the Dougherty Valley. The water connection fee proposed for the City of Livermore inclusive of the Zone 7 water connection fee is greater than Contra Costa Water District's water connection fee of $20,090. Water connection fees are less for water service in Alameda County Water District, Antioch, Fairfield, Martinez, and Pittsburg. It is important to note, however, that it is difficult to make direct comparisons of fees assessed by different agencies because of differences in developer contributions, source of supply, and service area characteristics. It is particularly difficult to identify the proportion of expansion facilities contributed by developers in other agencies. It is also important to note that these other agencies will likely increase connection fees over the next year.

Water Connection Fee Recommendations

It is not recommended but this study finds that the City of Livermore could decrease its connection fee for 5/8-inch meters from $3,694 to $3,500. It is recommended that the City continue to assess higher connection fees to larger meters based on the maximum continuous flow operation for the meter being installed compared to a 5/8-inch meter's 10 gallons per minute maximum continuous flow rating. The City began this latter policy via implementation of this Consultant's Water Connection Fee Study of May 1997. Proposed water connection fees are presented in Table 18 on the following page. If the City elects to phase in the Minimum Base Fees and maintain the current water connection fee for next fiscal year 2009/10, no changes are needed to the City's water connection fee schedule.

Economic Cycling and Higher Reserves. Ideally, the study recommendations would be based on pay-as-you-go financing for water expansion costs with accrued connection fees and interest income without debt financing. However, the study findings show a need for debt financing for nearly half of water expansion costs. Accordingly, it is recommended that, before issuing any new debt, the City consider the higher connection fees in the financial and economic analyses presented herein for economic cycling and higher reserves in order to minimize risk to existing water ratepayers.

Use of Water Connection Fee Revenue. The revenues derived from water connection fees for should continue to be deposited to the City's Water Expansion & Storage

Fee Fund, Fund 251. Water Expansion Fund reserves should only be used to fund the costs of expansion projects for the potable water and recycled water systems and City direct and indirect administration costs of expansion of the potable water and recycled water systems.

Water Connection Fee Study Updates. It is currently estimated that these water connection fees escalated annually for inflation will recover adequate revenues to fund currently planned expansion projects for thirty years. However, there will obviously be changes over time to the many variables upon which these connection fee estimates are based and hence it is essential to regularly update this study. Normally, study updates should be conducted biennially to incorporate actual and revised projections of growth, inflation, interest income, debt financing, and construction costs and scheduling. Given the many changes of recent years, this study should be updated annually or at least biennially until the study variables stabilize.

Table 18. Proposed Water Connection Fees By Meter Size

Meter Size, Inches	Capacity Factor	Connection Fee, Dollars		
		City Fee	Zone 7 Fee	Total Fee
5/8	1.0	3,500	21,550	25,050
3/4	1.5	5,250	32,325	37,575
1	2.5	8,750	53,875	62,625
1 1/2	5.0	17,500	107,750	125,250
2	8.0	28,000	172,400	200,400
3*	35.0	122,500	754,250	876,750
4*	100.0	350,000	2,155,000	2,505,000
6*	200.0	700,000	4,310,000	5,010,000
8*	350.0	1,225,000	7,542,500	8,767,500
10*	550.0	1,925,000	11,852,500	13,777,500

*Fee factors (and charges) for 3-inch and larger meters are based on the use of Sensus Series "W" turbo meters. Charges for use of meters of different capacities or brands in this size range will be as determined by the City of Livermore based on the maximum rate of continuous flow operation for the meter being installed compared to a 5/8-inch meter's 10 gallons per minute maximum continuous flow rating.

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CHAPTER 4

STORM DRAIN FEE ANALYSES

A study of City storm sewer fees for expansion to serve future increases in impervious areas is presented in this chapter.

History

As with the City's wastewater and water connection fees, the City has an established policy of financing storm drain expansion via a one-time fee assessed with a building permit application. The City's current storm drain fee of $902 for a dwelling unit equivalent (DUE) is based on increases in the 20-City ENR CCI since the City implemented its last comprehensive storm drain fee study completed by this Consultant in August 2004. This storm drain fee is for all new impervious area including but not limited to curbs, gutters, sidewalks, roadways, and other impervious area within the development as defined by the City's Storm Drain Ordinance. This ordinance is to be revised so that the storm drain fee also provides for development driven creek culvert improvements because Zone 7 is not providing for the cost of creek culvert improvements.

Storm Drain Expansion Costs & Growth

Historical storm drain expansion revenues and expenses are presented in Table 19 for fiscal years 1996/97 through last fiscal year 2007/08. As shown, the fiscal year 1996/97 fund balance of $2.0 million has decreased to $1.2 million over these twelve years. The fee was increased from $562/DUE to $833/DUE.

Storm Drain Expansion Costs. A summary of the City's major storm drain infrastructure expansion projects is presented in Table 20. There are also projects needed to eliminate existing deficiencies but these were removed from the listing shown in Table 20. The cost of storm drain projects allocable to expansion is $16,547,700 through fiscal year 2039/40 exclusive of any debt service expenses. Recent costs expended total $3.9 million, and $12.6 million remains to be constructed.

Administrative Expenses. There are administrative expenses for expansion projects such as engineering, management, accounting, financing, and so forth. Municipal utilities have differing practices on recovery of administrative expenses with some making direct charges on a per project basis and others assessing an overhead percentage of project cost or fee revenue collected because much of such expense is an indirect cost rather than specifically tracked to each project. In this study, administrative expenses are included in the estimated costs for each project.

Storm Drain Growth Projections. Storm drain growth projections are presented in Table 21, and include future increases of impervious areas that total 894 acres, including 474 acres of residential development and 420 acres of nonresidential development for fiscal years 2008/09 through 2039/40. As with wastewater and water growth projections,

Table 19. Historical City of Livermore Storm Sewer Expansion Cash Flow Analysis, FYs 1996/97 Through 2007/08

Description	Fiscal Year Beginning July 1 and Ending June 30, Thousands Of Dollars											
	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08
Beginning Balance	2,032	2,417	2,538	1,857	2,306	2,277	2,731	2,775	1,157	1,165	983	1,433
Income												
Connection Fees	500	570	728	550	596	456	383	278	371	285	516	499
Developer Contributions												
Other												
Interest Income	102	125	138	99	126	94	79	70	43	(5)	45	56
2007 Loan Proceeds												
Total, Income	602	695	866	649	723	550	463	348	414	280	561	555
Expenses												
Storm Expansion	218	573	1,547	200	752	97	419	1,965	406	462	111	419
Administration												
Existing Debt												
2007 Loan Payments												332
Adjust to Audit												1
Total, Expenses	218	573	1,547	200	752	97	419	1,965	406	462	111	752
Ending Balance	2,417	2,538	1,857	2,306	2,277	2,731	2,775	1,157	1,165	983	1,433	1,236
Connection Fee/DUE	562	574	574	585	609	614	633	647	767	763	798	833

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Table 20. City of Livermore Storm Sewer Expansion Capital Improvement Program Costs By Project

Capital Improvement Program Project Description	Project Number	Prior Years	Fiscal Years 2008/09 (Actual) Through 2039/40 (Projected), Current Thousands Of Dollars															
			08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24
Revenue Refund Expense	-	329.1	12.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Utility Master Planning-Downtown G.P.	1988-15	182.0	145.6	39.0	20.0	10.0	10.0	10.0	150.0	10.0	10.0	10.0	10.0	10.0	150.0	10.0	10.0	10.0
City Mapping Syst	1993-64	2,359.5	21.5	34.0	38.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
Stanley Blvd & 4th & Murritea	1994-42	7.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aerial Map Upgrades	1997-67	10.1	0.0	27.5	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
CDD Mapping	1998-63	296.0	0.0	2.8	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Storm Lift Station Design	2000-42	62.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Misc. Storm Drain Projects	2000-56	21.4	0.0	0.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Arroyo Mocho Bank Stablization	2000-78	300.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
First St Impr Phase I	2003-21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Major SD Trunkline Upgrades	2005-20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	300.0	0.0	0.0	0.0	0.0	300.0	0.0	0.0
Brisa Storm Drain Proj.	2007-23	356.1	11.1	100.0	2,000.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Central Avenue Culvert Replacement	2009-17	0.0	0.0	0.0	0.0	0.0	500.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New CIP Culvert Improvements	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	600.0	0.0	0.0	600.0	0.0	0.0	0.0	0.0	600.0
New JLB Culvert Improvements	-	0.0	0.0	0.0	0.0	1,800.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total, Storm Sewer Projects		3,923.8	190.8	203.3	2,091.1	1,877.1	577.1	77.1	217.1	677.1	377.1	77.1	677.1	77.1	217.1	377.1	77.1	677.1

Capital Improvement Program Project Description	Project Number	Fiscal Year Ending June 30, Current Thousands Of Dollars																Total, 09/10-39/40
		24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36	36/37	37/38	38/39	39/40	
Revenue Refund Expense	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Utility Master Planning-Downtown G.P.	1988-15	10.0	10.0	10.0	150.0	10.0	10.0	10.0	10.0	10.0	10.0	150.0	10.0	10.0	10.0	0.0	0.0	889.0
City Mapping Syst	1993-64	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	0.0	0.0	990.0
Stanley Blvd & 4th & Murritea	1994-42	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aerial Map Upgrades	1997-67	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	0.0	0.0	307.5
CDD Mapping	1998-63	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	0.0	89.6
Storm Lift Station Design	2000-42	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Misc. Storm Drain Projects	2000-56	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	560.0
Arroyo Mocho Bank Stablization	2000-78	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
First St Impr Phase I	2003-21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Major SD Trunkline Upgrades	2005-20	0.0	0.0	0.0	0.0	0.0	400.0	500.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,500.0
Brisa Storm Drain Proj.	2007-23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,100.0
Central Avenue Culvert Replacement	2009-17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	500.0
New CIP Culvert Improvements	-	0.0	0.0	0.0	600.0	0.0	0.0	0.0	0.0	600.0	0.0	0.0	700.0	0.0	0.0	0.0	0.0	3,700.0
New JLB Culvert Improvements	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total, Storm Sewer Projects		77.1	77.1	77.1	817.1	77.1	477.1	577.1	77.1	677.1	77.1	217.1	777.1	77.1	77.1	0.0	0.0	12,436.1

*Costs are for November 2009 at an ENR CCI o 9719.42 .

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Table 21. Actual & Estimated Rates of Inflation, Interest & Growth

Fiscal	Rate, Percent		Growth, DUEs		
Year	Inflation	Interest	Residential	Nonresidential	Total
Actual					
1996/97	-0.1%	1.1%			889
1997/98	2.6%	1.3%			993
1998/99	1.9%	1.6%			1,267
1999/00	4.4%	1.2%			941
2000/01	0.1%	1.4%			979
2001/02	2.0%	0.9%			743
2002/03	3.1%	0.7%			606
2003/04	1.3%	0.9%			501
2004/05	5.6%	0.9%			486
2005/06	2.8%	-0.1%			373
2006/07	7.6%	0.9%			647
2007/08	0.3%	1.0%			599
2008/09	6.4%	0.8%	59	52	111
Projected					
2009/10	3.0%	3.0%	111	99	210
2010/11	3.0%	5.0%	111	99	210
2011/12	3.0%	5.5%	111	99	210
2012/13	3.0%	5.5%	111	99	210
2013/14	3.0%	5.5%	143	127	269
2014/15	3.0%	5.5%	182	161	343
2015/16	3.0%	5.5%	221	196	418
2016/17	3.0%	5.5%	222	196	418
2017/18	3.0%	5.5%	222	196	418
2018/19	3.0%	5.5%	222	196	418
2019/20	3.0%	5.5%	222	196	418
2020/21	3.0%	5.5%	222	196	418
2021/22	3.0%	5.5%	222	196	418
2022/23	3.0%	5.5%	222	196	418
2023/24	3.0%	5.5%	222	196	418
2024/25	3.0%	5.5%	222	196	418
2025/26	3.0%	5.5%	222	196	418
2026/27	3.0%	5.5%	222	196	418
2027/28	3.0%	5.5%	222	196	418
2028/29	3.0%	5.5%	222	196	418
2029/30	3.0%	5.5%	222	196	418
2030/31	3.0%	5.5%	222	196	418
2031/32	3.0%	5.5%	222	196	418
2032/33	3.0%	5.5%	222	196	418
2033/34	3.0%	5.5%	222	196	418
2034/35	3.0%	5.5%	222	196	418
2035/36	3.0%	5.5%	222	196	418
2036/37	3.0%	5.5%	222	196	418
2037/38	3.0%	5.5%	222	196	418
2038/39	3.0%	5.5%	23	21	44
2039/40	3.0%	5.5%	0	0	0
Total, Fiscal Years 1996/97- 2039/40					20,248
Total, Fiscal Years 2008/09 -2039/40					11,223
Total Build-Out Per Master Plans Beginning FY 2008/09					11,223

Average single-family residential use of 3,470 square-feet of impervious area is used to define dwelling unit equivalents (DUE's).

Planning is for future increases of impervious areas of 894 acres beginning in FY 08/09 acres, including 474 of residential acres and 420 of nonresidential acres. Projected growth is 53% residential & 47% nonresidential.

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near-term storm drain growth has been lowered due to the current economic climate. Average single-family use of 3,470 square-feet of new impervious area is used to define dwelling unit equivalents (DUEs). As shown in Table 21, new DUEs total 13,294 since this type of study was first conducted beginning with fiscal year 2004/05.

Storm Drain Fee Development

As previously discussed, the marginal cost-pricing method using incremental expansion costs and growth simply identifies the incremental cost per DUE without regard to the timing of growth and construction, interest income earned on reserves, debt service expense, and future inflation. The yet to be constructed project costs are estimated in Table 19 to be $12,436,000, as compared to the August 2004 Study estimate of $12,036,000 for storm fee design for 1,059 future impervious acres with 13,294 DUEs. This increase is partly due to the addition of development driven creek culvert improvements because Zone 7 is not providing for the cost of creek culvert improvements.

These data show an estimated incremental cost of $1,240/DUE as compared to the August 2004 Study estimate of $647/DUE and the current storm drain fee of $902/DUE. These incremental cost estimates are exclusive of debt service expenses that are needed due to early projects occurring before some of the growth to be served.

Long-Term Storm Drain Expansion Cash Flow Analysis. A long-term cash flow analysis is a much more sophisticated and relatively new means of connection fee design. It also assists the City with other elements of expansion planning such as planning for when debt financing may be needed.

As previously discussed, storm drain expansion costs and construction scheduling for projects to be funded by the City are estimated in Table 20. Rates of inflation and interest income used for study projections are shown in Table 21 along with growth projections. As previously discussed, except for current economic conditions being applicable to the near-term, this Consultant is assuming inflation to be 3.0 percent annually, interest income of 5.5 percent or 2.5 percent greater than estimated inflation, and debt issuances at 6.0 percent interest, 2 fee points, 9 reserve points, and a term of 30 years. It is important to note that the key assumption is not the rate of inflation or interest but rather interest earnings at the historical real rate of interest of 2 to 3 percent greater than inflation. Also note that all debt service payments are assumed to be made within the thirty-year study period though in reality the debt service shown for the last fiscal year 2039/40 contains debt payments beyond fiscal year 2039/40. The purpose is to design storm drain fees that are adequate to fund all estimated expansion costs including debt service.

Proposed Storm Drain Minimum Base Fee Cash Flow Analysis. A proposed Minimum Base Fee cash flow analysis for the City's storm drain facilities is presented in Table 22 for the next thirty fiscal years through 2039/40. This analysis is designed to minimize debt financing and have a minimal ending fund balance after funding all costs of expansion projects and debt financing over the next thirty years. As shown in Table 22, the beginning fund balance as of July 1, 2008 is $1.2 million and the ending fund balance is a present value $0.4 million as of June 30, 2040. As shown in Table 22, this analysis assumes a fiscal year 2009/10 connection fee increase from $902 to $1,260 escalated annually

Table 22. Minimum Base Fee: City of Livermore Long-Term Storm Sewer Expansion Cash Flow Analysis For Fiscal Years 2008/09 - 2039/40

Description	Fiscal Year Beginning July 1 and Ending June 30, Actual for 08/09 & Escalated Thousands Of Dollars Thereafter															
	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24
Beginning Balance	1,236	1,055	5,000	2,951	990	370	386	352	886	723	959	397	651	732	590	913
Income	Analysis With 4-Year Economic Cycling at 100% . Maximum fund balance is 5 years debt service at $1.9 million. Minimum fund balance is 2 years debt service at $0.8 million.															
Connection Fees	97	265	273	282	290	382	503	631	650	669	690	711	732	754	777	800
Developer Contribs																
Other	42															
Interest	34	89	194	105	36	20	20	33	43	45	36	28	37	35	40	33
New Debt Proceeds		3,800						1,000								
Total, Income	173	4,154	467	387	327	403	523	1,664	693	714	726	739	769	790	818	833
Expenses																
Storm Sewer Expansio	191	209	2,218	2,051	650	89	259	833	478	101	910	107	310	554	117	1,055
Administration	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Developer Reimburse																
Existing Debt																
2007 COPs	163	0	0	0	0	0	0	0	0							
New Debt																
Debt #1 Payments			297	297	297	297	297	297	297	297	297	297	297	297	297	297
Debt #2 Payments									81	81	81	81	81	81	81	81
Debt #3 Payments																
Total, Expenses	354	209	2,516	2,348	947	387	556	1,130	856	478	1,288	485	687	932	495	1,433
Ending Balance	1,055	5,000	2,951	990	370	386	352	886	723	959	397	651	732	590	913	314
Connection Fee/DUE	868	1,260	1,300	1,340	1,380	1,420	1,465	1,510	1,555	1,600	1,650	1,700	1,750	1,805	1,860	1,915

Description	Fiscal Year Beginning July 1 and Ending June 30, Escalated Thousands Of Dollars															
	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36	36/37	37/38	38/39	39/40
Beginning Balance	314	662	1,051	1,483	630	1,087	828	360	877	196	759	1,069	139	784	1,495	1,324
Income																
Connection Fees	823	849	874	901	928	955	984	1,014	1,045	1,076	1,108	1,141	1,175	1,210	131	0
Developer Contribs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest	26	46	68	57	46	51	32	33	29	26	49	32	25	61	75	60
New Debt Proceeds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total, Income	850	894	941	957	974	1,006	1,016	1,047	1,074	1,102	1,157	1,173	1,199	1,271	207	60
Expenses																
Storm Sewer Expansio	124	127	131	1,433	139	888	1,106	152	1,376	161	468	1,726	176	182	0	0
Administration	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Developer Reimburse	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Debt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007 Loan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Debt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Debt #1 Payments	297	297	297	297	297	297	297	297	297	297	297	297	297	297	297	0
Debt #2 Payments	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	484
Debt #3 Payments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total, Expenses	502	505	509	1,811	517	1,265	1,484	530	1,754	539	846	2,104	554	560	378	484
Ending Balance	662	1,051	1,483	630	1,087	828	360	877	196	759	1,069	139	784	1,495	1,324	900
Connection Fee/DUE	1,970	2,030	2,090	2,155	2,220	2,285	2,355	2,425	2,500	2,575	2,650	2,730	2,810	2,895	2,980	3,070

Beginning 2009/10 cash is $1.1 million and the present value ending cash balance is estimated at $0.4 million.
The fiscal year 2009/10 connection fee is $1,260 that is escalated annually for inflation thereafter.
Present value of new debt required is $4.5 million of bond proceeds or bond issues of $5.0 million.
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thereafter for inflation through fiscal year 2039/40. This analysis also assumes new debt financings of $5.0 million. There are many assumptions in this analysis as previously discussed including 3,470 square-feet of new impervious area per DUE. This fee of $1,260 contains no allowance for economic cycling modeling or minimum reserves of two years debt service and maximum reserves of five years debt service.

Phasing In Minimum Base Fee. Due to the current economic slow down, City staff requested an analysis that maintains current fees over next fiscal year 2009/10 and then phases in the Proposed Minimum Base Fees over the following four fiscal years at twenty-five percent per year of the minimum increase needed. This is shown below, and is presented in Table 22a. The affect is an ending present value of zero instead of a positive ending fund balance of $0.4 million or a loss of revenues of $0.4 million.

Fiscal Year	09/10	10/11	11/12	12/13	13/14
Minimum Fee	$1,260	$1,300	$1,340	$1,380	$1,420
Phasing Increase					
Percent Increase	0%	25%	50%	75%	100%
Phasing Fee	$902	$1,000	$1,120	$1,260	$1,420
Fee Increase	$0	$98	$120	$140	$160
Current $ Phasing	$902	$970	$1,055	$1,155	$1,260
Increase	$0	$68	$85	$100	$105
Alternate Phasing					
Current $ Phasing*	$902	$992	$1,081	$1,171	$1,260
Increase	$0	$89	$89	$89	$89

Economic Cycling. As previously discussed in Chapter 2 for wastewater connection fee design and Chapter 3 for water connection fee design, economic cycling is a new concept designed by this Consultant over the years 1999 and 2000 at the request of LAVWMA, DSRSD and Pleasanton in order to minimize the risk of wastewater expansion debt to existing ratepayers.

City wastewater and water expansion planning currently show a similar magnitude of this issue with both requiring new debt in addition to existing debt without very significant fee increases. Applying the same assumptions as in Chapter 2 for wastewater connection fee design, economic cycling at thirty-five percent is presented in Table 23 for storm drain fee design. The affects of economic cycling are higher storm drain debt estimates and higher storm drain fee estimates. The question for the City will be whether some contingencies should be provided in storm drain fee design if actual growth is slower or less than growth projections made now. As shown in Table 23, the base storm sewer fee of $1,260 increases to $1,340 with Economic Cycling, for an increase of 6 percent. Both fees have nearly the same ending present value fund balances of $0.4 million and $0.5 million, respectively, and hence minimal reserves are provided for by both alternatives.

Minimum & Maximum Reserves. In conjunction with economic cycling for regional sewer expansion planning, DSRSD and Pleasanton also agreed to setting reserves at a minimum of two years debt service and a maximum of five years debt service. This on top

Table 22a. Phasing In Minimum Base Fee: City of Livermore Long-Term Storm Sewer Expansion Cash Flow Analysis For Fiscal Years 2008/09 - 2039/40

Description	Fiscal Year Beginning July 1 and Ending June 30, Actual for 08/09 & Escalated Thousands Of Dollars Thereafter															
	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24
Beginning Balance	1,236	1,055	4,923	2,806	790	132	135	88	607	429	649	70	306	368	206	508
	Analysis With 4-Year Economic Cycling at 100% . Maximum fund balance is 5 years debt service at $1.9 million.															
Income								Minimum fund balance is 2 years debt service at $0.8 million.								
Connection Fees	97	190	210	235	265	382	503	631	650	669	690	711	732	754	777	800
Developer Contribs																
Other	42															
Interest	34	88	189	96	25	7	6	19	28	29	19	10	18	15	19	11
New Debt Proceeds		3,800						1,000								
Total, Income	173	4,078	399	332	290	389	509	1,649	678	698	709	721	750	770	797	811
Expenses																
Storm Sewer Expansio	191	209	2,218	2,051	650	89	259	833	478	101	910	107	310	554	117	1,055
Administration	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Developer Reimburse																
Existing Debt																
2007 COPs	163	0	0	0	0	0	0	0	0							
New Debt																
Debt #1 Payments			297	297	297	297	297	297	297	297	297	297	297	297	297	297
Debt #2 Payments									81	81	81	81	81	81	81	81
Debt #3 Payments																
Total, Expenses	354	209	2,516	2,348	947	387	556	1,130	856	478	1,288	485	687	932	495	1,433
Ending Balance	1,055	4,923	2,806	790	132	135	88	607	429	649	70	306	368	206	508	(114)
Connection Fee/DUE	868	902	1,000	1,120	1,260	1,420	1,465	1,510	1,555	1,600	1,650	1,700	1,750	1,805	1,860	1,915

Description	Fiscal Year Beginning July 1 and Ending June 30, Escalated Thousands Of Dollars															
	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36	36/37	37/38	38/39	39/40
Beginning Balance	(114)	211	575	981	100	528	238	(262)	221	(496)	28	299	(674)	(74)	591	369
Income																
Connection Fees	823	849	874	901	928	955	984	1,014	1,045	1,076	1,108	1,141	1,175	1,210	131	0
Developer Contribs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest	3	21	42	29	17	20	(1)	(1)	(7)	(13)	9	(10)	(20)	14	26	7
New Debt Proceeds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total, Income	826	870	915	930	945	976	984	1,013	1,038	1,064	1,116	1,131	1,155	1,224	157	7
Expenses																
Storm Sewer Expansio	124	127	131	1,433	139	888	1,106	152	1,376	161	468	1,726	176	182	0	0
Administration	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Developer Reimburse	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Debt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007 Loan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Debt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Debt #1 Payments	297	297	297	297	297	297	297	297	297	297	297	297	297	297	297	0
Debt #2 Payments	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	484
Debt #3 Payments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total, Expenses	502	505	509	1,811	517	1,265	1,484	530	1,754	539	846	2,104	554	560	378	484
Ending Balance	211	575	981	100	528	238	(262)	221	(496)	28	299	(674)	(74)	591	369	(107)
Connection Fee/DUE	1,970	2,030	2,090	2,155	2,220	2,285	2,355	2,425	2,500	2,575	2,650	2,730	2,810	2,895	2,980	3,070

Beginning 2009/10 cash is $1.1 million and the present value ending cash balance is estimated at ($0.0) million.
The fiscal year 2009/10 connection fee is $902 that is escalated annually for inflation thereafter.
Present value of new debt required is $4.5 million of bond proceeds or bond issues of $5.0 million.
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Table 23. Economic Cycling: City of Livermore Long-Term Storm Sewer Expansion Cash Flow Analysis For Fiscal Years 2008/09 - 2039/40

Description	Fiscal Year Beginning July 1 and Ending June 30, Actual for 08/09 & Escalated Thousands Of Dollars Thereafter															
	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24
Beginning Balance	1,236	992	4,766	2,530	363	(164)	59	258	3,105	2,479	2,214	1,110	778	1,267	1,571	2,380
	Analysis With 4-Year Economic Cycling at 35% . Maximum fund balance is 5 years debt service at $2.7 million.															
Income	Minimum fund balance is 2 years debt service at $1.1 million.															
Connection Fees	34	99	102	104	414	613	747	887	241	249	256	264	1,283	1,321	1,359	1,400
Developer Contribs																
Other	42															
Interest	34	85	178	77	5	(3)	8	90	149	126	89	51	55	76	106	126
New Debt Proceeds		3,800						3,000								
Total, Income	110	3,984	279	182	420	610	755	3,977	391	374	345	315	1,338	1,397	1,464	1,526
Expenses																
Storm Sewer Expansio	191	209	2,218	2,051	650	89	259	833	478	101	910	107	310	554	117	1,055
Administration	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Developer Reimburse																
Existing Debt																
2007 COPs	163	0	0	0	0	0	0	0	0							
New Debt																
Debt #1 Payments			297	297	297	297	297	297	297	297	297	297	297	297	297	297
Debt #2 Payments									242	242	242	242	242	242	242	242
Debt #3 Payments																
Total, Expenses	354	209	2,516	2,348	947	387	556	1,130	1,017	640	1,449	646	849	1,093	656	1,594
Ending Balance	992	4,766	2,530	363	(164)	59	258	3,105	2,479	2,214	1,110	778	1,267	1,571	2,380	2,311
Connection Fee/DUE	868	1,340	1,380	1,420	1,465	1,510	1,555	1,600	1,650	1,700	1,750	1,805	1,860	1,915	1,970	2,030

Description	Fiscal Year Beginning July 1 and Ending June 30, Escalated Thousands Of Dollars															
	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36	36/37	37/38	38/39	39/40
Beginning Balance	2,311	2,071	1,824	1,569	(27)	943	1,248	1,398	2,589	1,162	916	354	(1,519)	(226)	1,197	1,733
Income																
Connection Fees	306	315	325	334	1,624	1,673	1,724	1,776	388	399	411	424	2,055	2,117	998	884
Developer Contribs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest	117	104	91	41	25	59	71	107	100	56	34	(31)	(47)	26	78	80
New Debt Proceeds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total, Income	423	420	416	376	1,649	1,731	1,795	1,883	488	455	445	392	2,009	2,143	1,076	964
Expenses																
Storm Sewer Expansio	124	127	131	1,433	139	888	1,106	152	1,376	161	468	1,726	176	182	0	0
Administration	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Developer Reimburse	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Debt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007 Loan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Debt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Debt #1 Payments	297	297	297	297	297	297	297	297	297	297	297	297	297	297	297	0
Debt #2 Payments	242	242	242	242	242	242	242	242	242	242	242	242	242	242	242	1,452
Debt #3 Payments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total, Expenses	663	667	670	1,972	678	1,427	1,645	691	1,916	701	1,007	2,265	716	721	539	1,452
Ending Balance	2,071	1,824	1,569	(27)	943	1,248	1,398	2,589	1,162	916	354	(1,519)	(226)	1,197	1,733	1,246
Connection Fee/DUE	2,090	2,155	2,220	2,285	2,355	2,425	2,500	2,575	2,650	2,730	2,810	2,895	2,980	3,070	3,160	3,255

Beginning 2009/10 cash is $1.0 million and the present value ending cash balance is estimated at $0.5 million.
The fiscal year 2009/10 connection fee is $1,340 that is escalated annually for inflation thereafter.
Present value of new debt required is $6.1 million of bond proceeds or bond issues of $6.8 million.
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of economic cycling was helpful for the parties to reach agreement. It will, however, generate either surplus reserves later and/or lower connection fees later.

Economic Cycling with Minimum & Maximum Reserves analyses are shown in Table 24 for City storm drain fee design. As shown in Table 24, the Minimum Base Analysis with Economic Cycling fee of $1,340 increases to $1,480 with Minimum and Maximum Reserves, as compared to the Minimum Base Fee of $1,260. This is a significant increase of $220 over the Minimum Base Fee or 17 percent. Though this increase is not nearly as significant as for wastewater connection fee design at 36 percent, it is still a significant fee increase. Again, note that this is a question for the City as to what level of reserves should be held to be able to pay debt service if growth slows without the use of other City revenue and currently there is no other revenue related to storm drains.

Storm Drain Fee Recommendations

It is recommended that the City of Livermore increase its storm drain fee from $902/DUE to $1,260/DUE or $0.363 per square-foot for all new impervious area. New impervious area to be assessed this storm drain fee includes but is not limited to curbs, gutters, sidewalks, roadways, and other impervious area within the development as defined by the City's new Storm Drain Ordinance. The proposed storm drain fee estimate of $1,260/DUE is based on a single-family detached residential unit with an estimated average of 3,470 square-feet of total impervious area. This storm drain fee proposal is compatible with the methods used by Zone 7 to assess higher storm drain fees in the City's service area.

Economic Cycling and Higher Reserves. Ideally, the study recommendations would be based on pay-as-you-go financing for storm drain expansion costs with accrued storm drain fees and interest income without debt financing. However, the study findings show a need for debt financing for nearly all of storm drain expansion costs. Accordingly, it is recommended that, before issuing any new debt, the City consider the higher storm drain fees in the financial and economic analyses presented herein for economic cycling and higher reserves in order to minimize risk to the City's existing development.

Use of Storm Drain Fee Revenue. The revenues derived from storm drain fees for should continue to be deposited to the City's Storm Drain Expansion Fund, Fund 308. Storm Drain Expansion Fund reserves should only be used to fund the costs of expansion projects for the storm drain system and City direct and indirect administration costs of expansion of the City's storm drain system.

Storm Drain Fee Study Updates. It is currently estimated that these storm drain fees escalated annually for inflation will recover adequate revenues to fund currently planned expansion projects for thirty years. However, there will obviously be changes over time to the many variables upon which these connection fee estimates are based and hence it is essential to regularly update this study. Normally, study updates should be conducted biennially to incorporate actual and revised projections of growth, inflation, interest income, debt financing, and construction costs and scheduling. Given the many changes of recent years, this study should be updated annually or at least biennially until the study variables stabilize.

Table 24. Economic Cycling and Minimum & Maximum Reserves: Livermore Long-Term Storm Sewer Expansion Cash Flow Analysis For FYs 2008/09 - 2039/40

Description	Fiscal Year Beginning July 1 and Ending June 30, Actual for 08/09 & Escalated Thousands Of Dollars Thereafter															
	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24
Beginning Balance	1,236	992	4,776	2,552	398	(84)	208	494	3,448	2,867	2,649	1,596	1,319	1,972	2,453	3,455
	Analysis With 4-Year Economic Cycling at 35% . Maximum fund balance is 5 years debt service at $2.7 million.															
Income	Minimum fund balance is 2 years debt service at $1.1 million.															
Connection Fees	34	109	112	116	457	676	823	979	266	274	282	291	1,414	1,455	1,500	1,545
Developer Contribs																
Other	42															
Interest	34	85	179	79	8	3	19	106	169	148	114	78	88	118	158	189
New Debt Proceeds		3,800						3,000								
Total, Income	110	3,994	291	194	465	679	842	4,084	435	422	396	369	1,502	1,574	1,658	1,734
Expenses																
Storm Sewer Expansio	191	209	2,218	2,051	650	89	259	833	478	101	910	107	310	554	117	1,055
Administration	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Developer Reimburse																
Existing Debt																
2007 COPs	163	0	0	0	0	0	0	0	0							
New Debt																
Debt #1 Payments			297	297	297	297	297	297	297	297	297	297	297	297	297	297
Debt #2 Payments									242	242	242	242	242	242	242	242
Debt #3 Payments																
Total, Expenses	354	209	2,516	2,348	947	387	556	1,130	1,017	640	1,449	646	849	1,093	656	1,594
Ending Balance	992	4,776	2,552	398	(84)	208	494	3,448	2,867	2,649	1,596	1,319	1,972	2,453	3,455	3,595
Connection Fee/DUE	868	1,480	1,525	1,570	1,615	1,665	1,715	1,765	1,820	1,875	1,930	1,990	2,050	2,110	2,175	2,240

Description	Fiscal Year Beginning July 1 and Ending June 30, Escalated Thousands Of Dollars															
	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35	35/36	36/37	37/38	38/39	39/40
Beginning Balance	3,595	3,458	3,320	3,182	1,709	2,945	3,537	3,994	5,515	4,290	4,260	3,926	2,295	4,021	5,907	6,812
Income																
Connection Fees	337	347	358	369	1,790	1,845	1,900	1,959	428	441	454	468	2,273	2,342	1,103	978
Developer Contribs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest	189	181	174	131	125	173	202	254	262	229	219	166	169	266	340	362
New Debt Proceeds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total, Income	526	529	532	500	1,914	2,018	2,102	2,213	690	670	673	635	2,442	2,607	1,444	1,340
Expenses																
Storm Sewer Expansio	124	127	131	1,433	139	888	1,106	152	1,376	161	468	1,726	176	182	0	0
Administration	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Developer Reimburse	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Debt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007 Loan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Debt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Debt #1 Payments	297	297	297	297	297	297	297	297	297	297	297	297	297	297	297	0
Debt #2 Payments	242	242	242	242	242	242	242	242	242	242	242	242	242	242	242	1,452
Debt #3 Payments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total, Expenses	663	667	670	1,972	678	1,427	1,645	691	1,916	701	1,007	2,265	716	721	539	1,452
Ending Balance	3,458	3,320	3,182	1,709	2,945	3,537	3,994	5,515	4,290	4,260	3,926	2,295	4,021	5,907	6,812	6,700
Connection Fee/DUE	2,305	2,375	2,445	2,520	2,595	2,675	2,755	2,840	2,925	3,015	3,105	3,200	3,295	3,395	3,495	3,600

Beginning 2009/10 cash is $1.0 million and the present value ending cash balance is estimated at $2.7 million.
The fiscal year 2009/10 connection fee is $1,480 that is escalated annually for inflation thereafter.
Present value of new debt required is $6.1 million of bond proceeds or bond issues of $6.8 million.
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11-Mar-10