City of Placerville

Water and Wastewater Capital Improvement Charge Analysis

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EXECUTIVE SUMMARY

Bartle Wells Associates (BWA) was retained by the City of Placerville (the City) to recommend updates to the City's water and wastewater capital improvement charges (CICs). This nexus report details the methodology, analysis, and findings of this work.

Capital improvement charges (CICs) are collected by the City from new development requesting connection to the water and sewer utilities. The fees are designed to recover capital costs associated with provision of capital facilities to a new connection. The fees are subject to requirements set forth in the Mitigation Fee Act (California Government Code 66000 et seq.).

Pursuant to this Act, BWA recommends that the City of Placerville update both water and sewer CICs to better reflect the cost of providing capacity to new connections. More specifically, for the water utility, BWA finds that:

- The City should levy a water capital improvement charge based on the "average cost" methodology. Under this method, a fee is calculated based on the value of both the existing water infrastructure (a "buy-in"), as well as those future improvements which benefit all users to system build-out ("expansion and upgrade").
- As requested by City Council, BWA calculated the proposed water CIC on two different bases: a "meter equivalents" basis, and a "peak-day demand" basis.

  Under a peak-day demand methodology, a new connection is charged based on its estimated peak-day demand on the water system. This method is most commonly used in a "storage constrained" system, where there are limits on storage to meet peak-day demands, and as such, new connections are charged according to the amount of this peak-day demand that they use.

  The meter equivalents method is based on meter size, and meter size relates directly to the impact on the distribution system and the maximum amount of water that can be drawn from the system at a given time. The number and size of meters connected to a water main directly impacts the size of the main that must be in service. For this reason, the meter equivalents method is most appropriate when measuring the impact of a new connection on a distribution system, in particular its ability to meet fire flow requirements.

  Because the City does not maintain its own storage system, and because most future capital expenditures relate to improvements to the distribution system and maintenance of fire flow, BWA recommends that the City use the "meter equivalents" method as the basis for levying the water capital improvement charge. This method provides the strongest nexus between the actual capital facilities provided by the City and a new connection's proportional impact on those facilities. Under this method, the recommended water capital improvement charge for a 5/8" meter is $5,867. This is an increase from the current water CIC for the City of $1,728.
- BWA also recommends that, because of the combined impact of the latest EID FCC pass-through agreement (increase from $6,360 to $10,198), that the City

phase-in the change of this fee into two periods; 50% immediately, and the remaining 50% 6-months later.

- Table 9 on page 12 details these findings and the recommended water capital improvement charge with phase-in.

For the wastewater utility, BWA finds that:

- The City should levy a wastewater capital improvement charge based on a "hybrid" average cost and expansion only basis. This means that all new connections should "buy-in" to the average cost of existing total capacity, while at the same time also fund 100% of those improvements that have been identified to meet the needs to new development.
- BWA recommends that the City levy the wastewater CIC on a "capacity" basis; that is, on the amount of total capacity a new connection is projected to use. To do this, BWA calculated a "unit cost of capacity" for both the existing system (the "buy-in"), as well as the unit cost of adding capacity through expansion projects.
- Under this method, the recommended wastewater capital improvement charge for one single family dwelling (or one EDU, which is assumed to generate approximately 175 gallons per day to the sanitary sewer system) is $6,280.
- The wastewater CICs for multi-family units, and for non-residential connections would be levied based on the number of EDUs connecting to the system. Table 17 on page 19 details the recommended wastewater CICs with phase-in.
- BWA recommends that the increase to the wastewater CIC be phased in over two periods as well; 50% immediately, and 50% 6-months later.

BWA also recommends that both fees be indexed to the annual change in the Engineering News Record – Construction Cost Index. By updating these fees annually based on this index, the fees will keep pace with rising cost of construction.

Finally, BWA recommends that the City continue its policy of crediting new development against their calculated capital improvement charges based on "in-kind" capital contributions which substantially benefit other connections by adding capacity or through correcting deficiencies that would otherwise require City expenditures.

BACKGROUND

Bartle Wells Associates (BWA) was retained by the City of Placerville (the City) to recommend updates to the City's water and wastewater capital improvement charges (CICs). This nexus report details the methodology, analysis, and findings of this work.

The purpose of this study is to provide the City with updated analysis demonstrating a clear nexus between water and wastewater capital improvement charges and the new development paying those fees. These fees, which fall under GC 66013 and Health and Safety Code Section 5471, are set such that the City can recover the costs of both *existing* and *future* facilities provided by the City for the benefit of new development.

More specifically, a capital improvement charge should recover both the costs of providing capital infrastructure that benefits new development (a so-called "buy-in" component) as well as the costs of future improvements related to growth. In both cases, fees for new development should not exceed the proportional benefit received by new development. This means that new connections should only buy-in to their "fair share" of existing assets which exist to provide them service, and only pay for the incremental cost of those projects which provide them benefit.

WATER CAPITAL IMPROVEMENT CHARGES (CICs)

Existing CICs

At the start of fiscal 2008/09, the total water CIC for a 5/8-inch meter was $8,088. Of this amount, $6,360 is directly "passed through" to El Dorado Irrigation District under an existing agreement. This pass-through fee to EID provides for the City's share of capital costs associated with the provision of water supply and major transmission and storage assets by EID.

The agreement between EID and the City was recently updated to reflect the increasing FCCs charged by EID. The new negotiated pass-through amount due for each new water connection in the City is now $10,198, which includes miscellaneous fees for Gabbro Soils and the Line and Cover Program Phases 1 through 3. Of note, even if the City maintained the existing city portion of the water CIC at $1,728, the total water CIC levied by the City would increase from $8,088 to $11,926.

Table 1 summarizes the current water CIC, and its components.

Table 1
City of Placerville
Current Water Capital Improvement Charges (1)

Meter Size	EID FCC	City CIC	Total CIC	Meter Ratio
5/8" & 3/4"	$6,360	$1,728	$8,088	1.00
1"	12,723	3,456	16,179	2.00
1.5"	19,085	5,184	24,269	3.00
2"	31,808	8,640	40,448	5.00
3"	146,320	39,744	186,064	23.00
4"	426,236	115,776	542,012	67.01

(1) Current water CICs, adopted by Res #7372, 5/29/06; does not include agreed increase to EID fee

The Water Utility

Current Connections The City of Placerville is largely built-out within its water service area. The City expects small amounts of in-fill development (approximately 30-100 units per year) between now and full build-out of the service area, though this development will require limited new capacity in the system.

As of July 1, 2008, there were approximately 2,726 connections to the water system, ranging in size from 5/8-inch to 4-inch meters. For the purposes of calculating a connection's impact on a system, meters larger than 5/8-inch are converted to "5/8-inch meter equivalents" using American Water Works Association (AWWA) meter demand ratios (a demand ratio is a reflection of the amount of water a meter can instantaneously demand from a system as it relates to a 5/8-inch meter). The number of meter equivalents is calculated by multiplying the AWWA meter ratio by the number of meters of that size. Of note, BWA uses the new AWWA ratio in place for the EID FCCs for consistency among the two charges.

All single family residential water connections are assumed to equal one meter equivalent, regardless of the meter size in service. In total, there are 3,447 5/8-inch meter equivalents in service in the City. Table 2 details these findings.

Table 2
City of Placerville
Water Meter Inventory

Residential	**No. of Accounts**	**Meter ratio (2)**
All residential accounts (1)	2,218	1.0
Non-Residential		
5/8"	286	1.0
3/4"	1	1.0
1"	87	2.0
1-1/2"	26	3.0
2"	93	5.0
3"	10	12.0
4"	5	21.0
Total non-residential	508	
Total all accounts	2,726	
Total 5/8" meter equivalents		3,447

(1) All single family residential accounts counted as one meter equivalent; size varies from 5/8" to 1"
(2) Updated meter ratios for new EID FCCs used for consistency

Water Demand and Growth Projections The Water Master Plan, completed in 2005 by Kennedy/Jenks, developed projections of the amount of new development expected between 2005 existing development and ultimate build-out. The Plan estimates that current average day demands on the system were approximately 1.75 million gallons per day (mgd) in 2005, and at full-build-out of the water service area, average day demands would be 2.14 mgd. Peak-day demands for existing and build-out would be 3.24 mgd and 4.04 mgd respectively. In short, this means that the water service area is approximately 82% "built-out."

Converting these growth projections into new meter equivalents, BWA estimates that the City will add another 779 meter equivalents to its service area between now and build-out.

Table 3 details these calculations.

Table 3
City of Placerville
Water System Capacity Analysis (1)

Existing development	**gpm**	**gpd**
Average day demand (2)	1,213	1,746,000
Peak day demand (2)	2,267	3,265,000
Full build-out (3)		
Average day demand	1,488	2,143,000
Peak day demand	2,805	4,039,000
Capacity Analysis		**Meter Equivalents**
Existing share of build-out capacity	81.5%	3,447
Future share of build-out capacity	18.5%	779
		4,226

(1) All water demand data and projections from Kennedy/Jenks Water Master Plan, 2005
(2) Assumes 2.75% annual growth from 2005-Existing through 2008, per Water Master Plan
(3) Demand at full system build-out of water service area

Water System Fixed Assets The City receives treated water from El Dorado Irrigation District through approximately ten bulk connections and four 1-inch service meters. The City has only one 40,000 gallon storage tank, at the abandoned Sierra Water Treatment Plant. As such, the bulk of the City's capital assets for the water system are in buildings and water distribution lines.

In order to value these assets for the purposes of setting the "buy-in" component of the capital improvement charge, BWA recommends the City use the "Replacement Cost New Less Depreciation" (or, RCNLD) method for valuing public utilities. This is the most common way of determining the fair value of public utility assets.

To develop an RCNLD, BWA inflates the estimated original cost of an asset (or deflated replacement cost) into 2008$ using the ENR-Construction Cost Index. From this amount, the accumulated depreciation is subtracted to account for wear and tear on the asset.

Table 4 summarizes this calculation for all non-distribution system assets. In total, the RCNLD for these assets is $2.040 million.

Table 4
City of Placerville
Water Enterprise Capital Assets (Non-Distribution Lines)

Capital Asset Description	Date Placed in Service	Estimated Life Years	Replacement Cost	Depreciation @ 6/30/08	Replacement Cost Less Depreciation
BUILDINGS & BUILDING IMPROVEMENTS					
Facility Upgrade *(control building, large clearwell)*	1953	0	$1,250,000	$579,459	$670,541
WTP Bypass	2004	38	449,228	44,014	405,214
City Hall-3101 Center Street	2005	39	454,921	21,969	432,952
Total Buildings & Building Improvements			$2,154,149	$645,442	$1,508,707
CONSTRUCTION IN PROGRESS					
Water line projects	2008		$23,696	$0	$23,696
Highway 50 Ops - water	2008		209,944	0	209,944
Highway 50 Ops - water	2009		160,897	0	160,897
Highway 50 Ops - water (Caltrans)	2008		121,000	0	121,000
			$515,537	$0	$515,537
VEHICLES/EQUIPMENT					
Backhoe	2007		$21,201	$5,656	$15,545
TOTAL			**$2,690,887**	**$651,098**	**$2,039,789**

For distribution system assets such as water lines, fire hydrants, and pressure release valves, BWA developed an RCNLD based on the inventory of these assets (by size and total length), their estimated replacement cost, and the estimated accumulated depreciation of those assets.

For water distribution lines, BWA multiplied the inventory of lines by size by cost estimates per linear foot of installed line from the Water Master Plan (inflated to 2008$). From this amount, an estimate of accumulated depreciation was subtracted (about 45% of the full replacement value).

For fire hydrants and other distribution system assets, BWA used the cost estimates from the fixed asset detail, inflated to 2008$, less estimated depreciation.

Table 5 summarizes these calculations. In total, BWA estimates that the water distribution system has an RCNLD of $20.824 million.

Table 5
City of Placerville
Water Distribution System Valuation

Water Distribution Lines Size (1)	Linear feet (LF)	Replacement Cost (per LF) (2)	Replacement Cost (total)	Estimated Depreciation (3)	Replacement Cost Less Depreciation
6-inch	135,700	$141.22	$19,163,554	$8,681,090	$10,482,464
8-inch	49,700	157.60	7,832,720	3,548,222	4,284,498
10-inch	11,600	174.00	2,018,400	914,335	1,104,065
12-inch	10,300	186.60	1,921,980	870,657	1,051,323
14-inch	100	220.65	22,065	9,995	12,070
16-inch	4,400	215.60	948,640	429,734	518,906
18-inch	13,500	224.43	3,029,805	1,372,502	1,657,303
TOTAL	**225,300**		**$34,937,164**	**$15,826,535**	**$19,110,629**
Other Distribution System					
Fire Hydrants			$2,551,000	$1,155,603	$1,395,397
Isolation Valves			438,000	198,414	239,586
PRV Station			83,000	37,599	45,401
Air Release Valve			60,000	27,180	32,820
TOTAL			**$3,132,000**	**$1,418,796**	**$1,713,204**
GRAND TOTAL					**$20,823,833**

(1) Inventory does not include 4" distribution lines; these are considered "local" facilities and do not provide shared capacity to build-out
(2) Unit cost estimates from City in 2003$; inflated to 2008$ based on change in 20-cities ENR-CCI since 2003
(3) Estimates 45.3% of replacement value is depreciated; based on average ratio of depreciation to replacement cost for City of Placerville Fixed Asset Detail, Water Distribution Lines, 2007/08

Water Capital Improvements BWA has also developed a list of those capital improvement projects identified in the Water Master Plan required to reach build-out conditions. These projects were detailed in Section 5 of the Master Plan, included as an Appendix to this report.

These projects are of *shared* benefit to all connections to the system, both existing and future. They correct deficiencies in areas to support required fire flows and efficient operation of the system, as well as providing upsizing to meet new water demands. As such, these improvements are justifiably included in the calculation of the water capital improvement charge, as they are needed to meet build-out conditions and provide benefit to new connections. However, because *both* existing and future users benefit from these projects, the cost is recovered evenly among all users, existing and future, in the water CIC calculation that follows in Table 8.

Table 6 details the planned water system improvements.

Table 6
City of Placerville
Water Master Plan - Proposed Near-Term Improvements

Pipe Improvements	**Linear Feet**	**$ per LF**	**Cost**
6" line	1,255	$141.22	$177,231
8" line	3,686	$157.60	580,914
10" line	948	$174.00	164,952
12" line	518	$186.60	96,659
			$1,019,756

Other Improvements	Cost (2005$)	Cost (2008$)
Connections	$192,000	$221,363
Hydro-pneumatic pump station	40,000	46,117
Other	233,800	269,556
Total	$465,800	$537,036

Subtotal construction cost		**$1,556,792**
Other costs (engineering, administration, contingencies)	**40%**	**$622,717**
TOTAL		**$2,179,509**

(1) From Kennedy/Jenks Water Master Plan, Table 14

Water Capital Improvement Charge Analysis

For the purposes of the calculation of the water capital improvement charge, Table 7 summarizes the overall investment (both past and future) in the water system required to meet build-out conditions. In total, the existing system investment (from Tables 4 and 5) net of related debt, is estimated at $22.615 million.

The future improvements (from Table 6) total $2.180 million. Taken together, the estimated net system investment to build-out is $24.795 million.

Table 7
City of Placerville
Total Water System Investment

Existing system investment (serving build-out capacity)	
Building and building improvements	$1,508,707
Water distribution system	20,823,833
Construction in progress	515,537
Vehicles/equipment	15,545
Less net long-term debt payable (rounded)	(248,423)
Net investment in existing infrastructure	$22,615,199
Future system improvements (to reach build-out capacity)	
Pipe Improvements	$1,019,756
Other projects	537,036
Other costs	622,717
Total water system improvements	$2,179,509
Net water system investment (to build-out)	**$24,794,708**

BWA has developed two different methodologies for calculating the water capital improvement charge from this valuation.

1. An **"average cost-meter equivalents"** based methodology, takes the full cost of the identified capital improvements (both existing and future) required to meet build-out conditions and divides those improvements equitably into the estimated total number of meter equivalents at build-out to arrive at a "per meter equivalent" charge. Put another way, under this methodology, each connection pays the same average cost (per 5/8" meter equivalent) of the existing and future improvements required to meet build-out.
2. An **"average cost-peak demand"** based methodology, which uses the same identified capital improvements from Method 1 (both existing and future), but rather than charge on a meter equivalent basis, divides them into the estimated peak day demand at build-out from the Water Master Plan. This produces a "per gallon of peak day demand" metric, which can then be applied to the estimated peak demand of a connection to arrive at the appropriate water capital improvement charge.

Table 8 details these calculations. Using the average cost-peak demand method, the estimated fee for one gallon of peak day capacity in the system is $6.14 per gallon. Using the estimated peak day demand of a single family home from the Water Master Plan of 808 gpd (430 average day demand x 1.88 peak day factor) gives an estimated water CIC of $4,963 per single family home. The fees for non-residential connections would scale from this number based on demand ratios as they relate to a 5/8-inch meter.

Using the average cost-meter equivalents methodology, the estimated fee per 5/8-inch meter is $5,867. The fees for larger meters are scaled based on demand ratio from there.

Table 8
City of Placerville
Water Capital Improvement Charge (CIC)

Net Water System Investment (from Table 7)		$24,794,708
Peak day demand		
Build-out capacity (gallons per day, peak day)		4,039,000
Unit cost of capacity - peak day (Total Investment / Capacity)		**$6.14**
Meter equivalents		
Build-out capacity (equivalent meter connections)		4,226
Unit cost per 5/8" meter (Total Investment / Total Meters)		**$5,867**

Proposed Water CIC (Peak day demand method)

Residential connections	**(gpd)**	**Fee (per unit)**
Single family residence	808	$4,963
Multi-family residence	606	$3,722
Non-residential connections	**Demand Ratio**	**Fee (per meter)**
5/8" & 3/4"	1.00	$4,963
1"	2.00	$9,927
1.5"	3.00	$14,891
2"	5.00	$24,818
3"	12.00	$59,551
4"	21.00	$104,215

Proposed Water CIC (Meter equivalents method)

Residential connections		**Fee (per unit)**
Single family residence		$5,867
Multi-family residence		$4,400
Non-residential connections	**Demand Ratio**	**Fee (per meter)**
5/8" & 3/4"	1.00	$5,867
1"	2.00	$11,736
1.5"	3.00	$17,605
2"	5.00	$29,341
3"	12.00	$70,404
4"	21.00	$123,207

Table 9 details the recommended water CICs given the recently instituted pass-through increases to the EID FCC. Table 9 also includes a proposed "phase-in" of the new water CICs discussed in more depth in the **Other Considerations** section of this report.

Table 9
City of Placerville
Proposed Water Capital Improvement Charges

PHASE I

Meter Size	EID FCC	City CIC	Total CIC	Meter Ratio (1)
5/8" & 3/4"	$10,198	$3,797	$13,995	1.00
1"	20,396	6,076	26,472	1.60
1.5"	30,594	7,595	38,189	2.00
2"	50,990	15,190	66,180	4.00
3"	122,376	22,785	145,161	6.00
4"	214,158	30,380	244,538	8.00

PHASE II

Meter Size	EID FCC	City CIC	Total CIC	Meter Ratio (1)
5/8" & 3/4"	$10,198	$5,867	$16,065	1.00
1"	20,396	9,387	29,783	1.60
1.5"	30,594	11,734	42,328	2.00
2"	50,990	23,468	74,458	4.00
3"	122,376	35,202	157,578	6.00
4"	214,158	46,936	261,094	8.00

(1) Updated meter ratios based on AWWA meter ratios; applied to City of Placerville portion only

WASTEWATER CAPITAL IMPROVEMENT CHARGES

Existing Fee

The current wastewater capital improvement charge is $3,800 for a single family residence. There is an additional $1,000 "connection fee" for all connections.

Table 10 details these existing charges.

Table 10
City of Placerville
Current Wastewater Capital Improvement Charges (CIC)

Connection Fee	Fee
Single Family Residential	$1,000
Multi-Family Residential	1,000
Each Additional Unit	750
Commercial	1,000
Each Additional Unit	750
Granny Housing Unit	750
Capital Improvement Charge	
All Units	$3,800

The Wastewater System

Current Connections As of July 1, 2008, the wastewater system has approximately 3,298 connections. The most common way to measure the overall flows and strengths to the system is to convert these connections to "equivalent dwelling units" (or EDUs) where one EDU is the same flow and strength as a single family home. For the purposes of this study, BWA adopts the existing flow and strength of one EDU established in the last rate study, 175 gpd discharged to the sanitary sewer, and 175 mg/l concentrations for both BOD and SS.

Using this formula, BWA calculated the number of EDUs attached to the sewer system as follows in Table 11. In total, there are an estimated 3,241 EDUs connected to the wastewater system.

Table 11
City of Placerville
Wastewater Connection Inventory

Category	Rate Code	No. of Accounts	No. of EDUs
Residential			
Single Family Residential	R	2,602	2,602
Residential - Lifeline	RL	51	51
Apartments	AP	160	120
Subtotal Residential		2,813	2,773
Non-Residential			
Bar	BR	4	5
Car Wash	CW	4	3
Churches	CH	18	13
Fairgrounds	FG	1	1
Fast Food	FF	24	41
Fire Station	FI	1	1
Hall	HL	1	1
Hospitals	HP	6	5
Hotel/Motel	MH	7	8
Laundromat	LM	3	2
Markets	MK	4	4
Mortuary	MO	1	1
Movie Theater	MT	1	2
Restaurants	RT	29	58
Rest Homes/ Boarding Homes	RH	4	3
Retail/Office	RS	359	284
Schools	SC	4	25
Service Stations	SS	14	13
Subtotal Non-Residential		485	468
Total No. of Accounts		3,298	3,241

(1) EDU conversions based on base sewer service charge ratios to single family residences

Sewer Demand and Growth Projections The wastewater collection and treatment system in the City of Placerville is also largely built-out, although less so than the water utility. The wastewater collection and treatment service area to build-out is actually larger than that of the water system, owing to the fact that EID provides water service to all new connections outside the City limits.

The City owns and operates both the collection system and a treatment plant which discharges into Hangtown Creek. This treatment plant has been recently upgraded to meet state water quality standards. It has a average day capacity of 2.3 millions gallons per day (mgd).

The City has completed a Sewer System Master Plan, which outlines the major planning assumptions between now and build-out of the sewer service area. Existing average day flows to the treatment plan are approximately 1.4 million gallons per day (per 2005, EPS Wastewater Rate Study and Revenue Program Inventory of Existing Connections). At build-out of the service area, the Master Plan estimates that flows will increase to

approximately 1.60 mgd. This is an addition of approximately 250,000 gallons per day. At 175 gpd per EDU, this equates to an additional of approximately 1,142 new EDUs.

Table 12
City of Placerville
Wastewater System Capacity Analysis (1)

Existing sewer system usage	
Flow (mgd, average day)	1.4
Average BOD (mg/l) (2)	225.5
Average SS (mg/l) (2)	188.0
BOD (lbs/day)	2,734
SS (lbs/day)	2,280
Build-out sewer system usage	
Flow capacity (mgd, average day)	1.6
Average BOD (mg/l) (2)	225.5
Average SS (mg/l) (2)	188.0
BOD (lbs/day)	3,103
SS (lbs/day)	2,587

(1) Based on Sewer System Master Plan TM#2, Land Use Analysis
(2) Flow and strength for one single family residence assumed at 175 gpd, 175 mg/l for BOD and SS

Sewer System Fixed Assets As with the water utility, BWA recommends that the City use the Replacement Cost New Less Depreciation (RCNLD) method for determining a value of the existing capital assets of the utility.

Using the fixed asset detail for non-collection lines, including Buildings and Improvements, Lift Stations, Construction in Progress, and Vehicles, the total value of all existing facilities is $61.428 million. Less accumulated depreciation, the total RCNLD for existing facilities is $57.502 million.

Table 13 details these findings.

Table 13
City of Placerville
Wastewater Enterprise Capital Assets -- FY 2007/08 (Non-collection system)

Capital Asset Description	Placed in Service	Estimated Life	Replacement Cost	Depreciation @ 6/30/08	Replacement Cost Less Depreciation
BUILDINGS & BUILDING IMPROVEMENTS					
Original Facility (40%)	1962	0	$2,250,000	$1,043,027	$1,206,973
Facility Upgrade (40%)	1976	0	1,250,000	579,459	670,541
Facility Upgrade (40%)	1980	0	1,000,000	463,568	536,432
Facility Upgrade (40%)	1990	0	625,000	309,105	315,895
Facility Upgrade (40%)	1995	0	250,000	103,648	146,352
Facility Upgrade (40%)	1997	0	2,850,000	1,066,129	1,783,871
City Hall-3101 Center Street	2005	39	312,638	37,747	274,891
Total Buildings & Building Improvements			$8,537,638	$3,602,683	$4,934,955
LIFT STATIONS			$759,400	$315,441	$444,000
CONSTRUCTION IN PROGRESS					
Emergency Sewer Line Repair	2008		$28,595	$0	$28,595
HWY 50 Ops.	2008		2,067,914	0	2,067,914
HWY 50 Ops.	2009		227,289	0	227,289
HWY 50 Ops. (Caltrans)	2008		2,260,371	0	2,260,371
WWTP Upgrade	2008		41,941,858	0	41,941,858
WWTP Upgrade	2009		5,089,753	0	5,089,753
Sewer Lift Station Rehab., Phase I	2008		2,514	0	2,514
Bennett Drive Sewer Rehab.	2008		173,694	0	173,694
Sewer Lift Station, Phase II	2008		25,723	0	25,723
Sewer Lift Station, Phase II	2009		2,929	0	2,929
Collection System I & I Reduction	2008		5,935	0	5,935
Tunnel Street Sewer Lining	2008		67,055	0	67,055
Total construction in progress			$51,893,630	$0	$51,893,630
VEHICLES/EQUIPMENT					
Backhoe			$42,400	$8,280	$34,120
Vactor truck			195,394	0	195,394
Total vehicles/equipment			$237,794	$8,280	$229,514
TOTALS			**$61,428,462**	**$3,926,404**	**$57,502,099**

In order to develop a valuation of the collection system assets, BWA used the same inventory by length method as described in the water section. In total, there are approximately 256,000 linear feet of sewer collection line within the City system. The total replacement value of this line is estimated at $39.090 million; less accumulated depreciation, the RCNLD is $21.382 million.

Adding the manholes and clean-outs into the valuation, the total RCNLD for the collection system assets is $23.494 million.

Table 14 details the valuation calculation for the collection system.

Table 14
City of Placerville
Collection System Valuation

Collection lines Size	Linear feet (LF)	Replacement Cost (per LF) (1)	Replacement Cost (total)	Estimated Depreciation (2)	Replacement Cost Less Depreciation
6-inch	186,600	$141.22	$26,351,652	$11,937,298	$14,414,354
8-inch	30,400	157.60	4,791,040	2,170,341	2,620,699
10-inch	8,300	174.00	1,444,200	654,223	789,977
12-inch	13,000	186.60	2,425,800	1,098,887	1,326,913
16-inch	3,400	215.60	733,040	332,067	400,973
18-inch	6,900	224.43	1,548,567	701,501	847,066
21-inch	7,700	233.25	1,796,025	813,599	982,426
TOTAL	**256,300**		**$39,090,324**	**$17,707,917**	**$21,382,407**
Other Collection System					
Manholes			$3,775,600	$1,710,347	$2,065,253
Cleanouts			84,400	38,233	46,167
TOTAL			**$3,860,000**	**$1,748,580**	**$2,111,420**
GRAND TOTAL					**$23,493,827**

(1) Unit cost estimates from City in 2003$; inflated to 2008$ based on change in 20-cities ENR-CCI since 2003
(2) Estimates 45.3% of replacement value is depreciated; based on average ratio of depreciation to replacement cost for City of Placerville Fixed Asset Detail, Collection System Lines, 2007/08

Sewer Capital Improvements The Sewer System Master Plan identified a number of improvements required to meet build-out flow conditions. However, unlike those improvements identified in the Water Master Plan, the improvements identified in this Master Plan are all sewer "upsizing" required for meeting the needs of new development. As such, the improvements are recovered solely through the wastewater CIC in the calculations that follow.

Table 15 details the capital improvements identified in the Sewer System Master Plan.

Table 15
City of Placerville
Sewer Collection System Expansion

Description	Quantity	Unit	Unit cost	Total
Broadway (Wiltse to Carson)	1,850	LF	$1,000	$1,850,000
Spanish Ravine	35	LF	$1,000	35,000
Spring Street Union to Coleman (projected)	511	LF	$400	204,400
Placerville Drive (Cold Springs to Hwy 50)	1,710	LF	$1,000	1,710,000
Mallard Lane crossing	190	LF	$600	114,000
Total improvements	**4,296**			**$3,913,400**

Source: Sewer System Master Plan, July 2006, Holmes International

Wastewater Capital Improvement Charge Analysis

BWA has developed a capacity-based capital improvement charge for the wastewater system. This fee takes into account both the value of existing capacity, as well as the cost of providing additional improvements which expand capacity for future users.

In total, BWA estimates the net investment in the existing system (less related debt) is $26.109 million. Of note, this amount is less the current outstanding balance of the wastewater system's debt ($54.887 million).

Because this infrastructure exists to provide for the full build-out capacity of the sewer system, it is appropriate to determine the unit cost on the full capacity basis. BWA estimates that the "buy-in" value of these existing facilities is $16.32 per gallon of average day demand ($26.1 million / 1,600,000 gallons per day).

To this amount, each new connection should be assessed an appropriate expansion component for the new improvements required to add additional capacity. The $3.9 million in improvements provides for the new 200,000 gallons per day of capacity between now and build-out. As such, the unit cost of this additional capacity is $19.57 per gallon per day of average day demand.

In total, the unit cost of capacity to provide for a new connection is $35.89 per gpd. For a one EDU connection, with a design flow of 175 gpd to the sanitary sewer, the recommended wastewater CIC is $6,280 per EDU.

Table 16
City of Placerville
Wastewater Capital Improvement Charge (CIC) Calculation

Existing system investment (serving build-out capacity)	
Buildings and improvements	$4,934,955
Collection system assets (from fixed asset detail)	23,493,827
Lift stations/vehicles & equipment	673,514
Construction in progress	51,893,630
Less related debt	($54,886,628)
Net investment in existing infrastructure	$26,109,298
Build-out capacity (average day)	
Flow (gpd)	1,600,000
Unit cost of existing capacity	**$16.32**
Future system improvements (to reach build-out capacity)	
Total improvements (from Table 15)	$3,913,400
Marginal capacity provided (average day)	
Flow (gpd)	200,000
Unit cost of added capacity	**$19.57**
Total Unit Cost of Capacity (buy-in plus expansion)	**$35.89**
Wastewater CIC (one EDU) (1)	**$6,280**

(1) Assumes domestic strength wastewater at 175 gpd; higher strength connections would require higher fees

The sewer CICs for non-residential connections are calculated based on the ratio of their fixed charge component to that of a single family residence. Using this relationship, Table 17 details the proposed sewer CICs for non-residential connections, including a two-part phase-in, as described more fully in the **Other Considerations** section of this report.

Table 17
City of Placerville
Proposed Wastewater CICs

Residential	**Phase I**	**Phase II**
Single Family Residential	$5,540	$6,280
Multi-family (per residential unit)	4,155	4,710
Non-Residential		
Bar	6,447	7,308
Car Wash	3,712	4,208
Churches	3,909	4,431
Fairgrounds	5,018	5,688
Fast Food	9,439	10,700
Fire Station	4,635	5,254
Hall	3,907	4,429
Hospitals	Varies	Varies
Hotel/Motel	Varies	Varies
Laundromat	4,166	4,722
Markets	5,412	6,134
Mortuary	7,483	8,483
Movie Theater	8,526	9,665
Restaurants	11,093	12,575
Rest Homes/ Boarding Homes	4,624	5,242
Retail/Office	4,376	4,961
Schools	Varies	Varies
Service Stations	5,212	5,908

OTHER CONSIDERATIONS

Phase-In of New Fees BWA frequently recommends that clients "phase-in" major changes to rates or fees to minimize the short-term effect of those changes on customers or new development.

After consulting with City staff and Council, BWA recommends that the City phase-in the water capital improvement charge change over the next 12 months. With a significant portion of the relative increase of the fee due to changes in EID's FCC agreement, the impact on new projects in the City would be very high should the City update its fee to the full demonstrated amount alongside EID.

With the city-portion of the fee set to increase from $1,728 to $5,867 ($4,139 in total change), the City should institute 50% ($2,070) of this change immediately, and the remaining 50% in 6 months time. Table 9, Proposed Water CICs, details this phase-in.

The City should also phase-in the wastewater CIC change in a similar manner; 50% (or approximately $740 increase) immediately, the balance 6-months later. Table 17 details this phase-in.

Credit for Capital Contributions In the course of developing projects requiring connection to the water and sewer utilities, the City may sometime request that new development provide "in-kind" capital contributions. This could take the form of new water or sewer main, an inter-connection to another portion of the water or sewer or system, or some other piece of infrastructure required to meet the demands of that project.

The City currently has a policy in place whereby projects which provide in-kind contributions may receive "credit" towards their water and sewer capital improvement charges if those projects mitigate the need for the City to undertake the same or a similar project in the future.

BWA has reviewed these existing policies, and recommends that the City continue to provide projects credit when those projects are of substantial shared benefit to the rest of the system. This may include upsizing of lines to provide new capacity, or if a project is a major replacement of a deficient line which provides benefit to other users of the system and mitigates the need for the City to complete a similar project.

For instance, if a new project of mixed use development totaling 7.5 EDUs (about 1,310 gallons per day of domestic strength wastewater), the proposed wastewater CIC would be $47,100. However, if that project constructs a sewer main upsizing that is included in the City CIP which provides the capacity for other new projects to connect, that project would be eligible for a credit against this fee in the amount of the sewer main upsizing.

Indexing of Fees BWA also recommends that the City index both charges to the annual change in the Engineering News Record – Construction Cost Index (20-cities). This change could be made administratively or through consent calendar within the Council each year, based on the change in the Construction Cost Index from the previous year.