

Final Report

Water and Wastewater Rate Study

**Mill Creek Water Reclamation District
Blackberry Township, Kane County, Illinois**

November 2011

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Mill Creek Water Reclamation District

Water and Sewer Rate Study

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Executive Summary

The Mill Creek Water Reclamation District retained Kevin W. Richardson, PE, BCEE to evaluate the District's current water and sewer rate structure and recommend future rates. The current rates became effective in 2008, utility operating conditions have changed since the current rates were put in place. The District's Board has made significant changes to the administration of the utility over the past year; these changes should yield substantial cost savings to the District's customers. An evaluation of the utilities rate structure which takes in account changed operating conditions and administration cost savings is necessary to insure that the utility can continue to provide adequate services to its customers.

In accordance with our Contract Agreement dated June 22, 2011, we have examined the books and records of the Mill Creek Water Reclamation District to review and develop adequate utility service rates. These rates are required to maintain the financial integrity of the District's water and sanitary system which provides service to Mill Creek Master Planned Community.

The basic principle in the successful operation of water and sanitary sewer systems is that sufficient funds should be generated through the charges for service to provide a self-supporting and self-perpetuating utility. Revenue should cover the cost of service to customers and the rates customers are charged should be representative of the service received.

In 2010 the District's utility systems had net value of approximately \$19.8 million, adequate rates are required to operate and maintain the value of the utility systems. The District water system consists of three wells, treatment plants for the wells, 1,000,000 gallons of storage and approximately 210,000 feet of water main. The sanitary sewer system has approximately 18,500 feet of force main and 167,800 feet of gravity sewer. There are six lift stations in the collection system. The wastewater treatment facility includes two aerated lagoons, sand filters for finishing treatment, the treated effluent is land applied for irrigation on the golf course and other landscaping in the development.

Before proceeding with the main discussion of our study, we will briefly summarize our principal conclusions and recommendations as follows:

The present rates and a sample bill calculation are shown in the table below.

Present Rates & Sample Bill Calculation				
			Units	Service Charges
Water & Sewer Volume Charge	\$6.90	1000/gallons	7	\$48.30
Meter Service Charge	\$9.00	per meter	1	\$9.00
Infrastructure Charge	\$4.50	per unit	1	\$4.50
Monthly Bill				\$61.80

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The current 2011 District budget is the basis for the 2011 expenses used to determine the adequacy of the existing rates. A review of past District system budgets, audit records and the current 2011 budget was performed before 2012 expenses were estimated. The result of a comparison of estimated revenues to the projected expenses for 2011 and 2012 indicates that the current rates are not adequate. Projected operating results for 2011 showing deficit of about \$123,500, when non-operating revenues and expenses are added the deficit grows to about \$148,700. The \$148,700 deficit does not include depreciation funding and cash reserves for operations; currently the District is not funding depreciation and cash reserves are depleted. The existing rates do not provide adequate revenue for operations in 2012, a deficit of projected for 2012 using existing rates. As was the case in 2011 the deficit does not take into account depreciation funding and operating reserves.

Revenue requirements were projected using a cash needs approach. The utility requires cash to meet its financial obligations which include operation and maintenance, administration expenses, as well as system capital improvements and debt service.

Operation expenses are the cash outlays required annually for the operation and maintenance of the utility systems. Operation expenses are directly related to delivering water to the customer and collecting wastewater. Expenditures for energy and chemicals are in direct proportion to the water demand of the system. The estimated total revenue required to fund operations in 2012 is estimated to be. \$1,479,780

Administration expenses are the expenses associated with providing service to the systems customers. Included in these expenses are customer accounting and collections. Generally administrative expenses are incurred even if there are no sales to customers. Because administration expenses are generally fixed, revenue for administration expenses should be collected using a fixed charge per customer, such as a meter charge. The estimated total required revenue to fund 2012 administration expenses is estimated to be. \$416,893

In addition to operating and administration expenses the district has debt service and installment contract payments. The District received a loan from the Illinois Environmental Protection Agency in 2000 to improve water quality, the loan has an interest rate of 2.675% per year and a payment schedule of \$15,609 for principal and interest paid in semiannual installments. The District has an installment contract with the developer of the community to pay back unpaid wastewater disposal fees and to purchase portable irrigation stations. There is a dispute over the amount of the installment payments and negotiations are ongoing at this time. For the purposes of the study an allowance has to be made for payment of the installment contracts. The use of an allowance in this study does constitute an acknowledgment by the District about the amount or whether the installment is due to the developer. Installment contract payments have been reported in the financial statements for the past several years and have contributed to the reported deficits of the system. It should be noted that even without the installment contract payments the

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system has operated at a deficit. The revenue required to fund debt service and installment contract obligations is estimated to be hundred and \$189,749 for 2012.

AWWA Manual M1, Principles of Water Rates, Fees and Charges recommends that the fixed charges recover costs such as meter reading billing costs and other costs that the utility incurs equally per customer or per account through a service charge or customer charge. The variable expenses should be recovered using a consumption charge or volumetric charge, the amount the customer pays varies based on the amount of water the customer consumes. Expenses categorized as being caused by operations should be recovered with a volumetric charge. Expenses categorized as administrative should be recovered using a service charge per customer. Debt service does not vary due to system demands, because of this and since the customers of the District have similar characteristics, it is recommended that debt service and general installment contract payments be recovered with a fixed charge similar to the existing infrastructure charge.

Rates were designed to generate the required revenues to fund the operations of the District. The table below compares the present rates to the required revenue. Deficiencies from the present rates were identified for 2011, the deficiencies continue from the present rates through 2012. Further down the table is a comparison of the proposed rates to required revenues.

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		Rate Design			
		Generated Revenue	Required Revenue	Deficiency	%
Present Rates					Deficient
Monthly Average Bills	2041				
Billed MG/Customer/Month	7.1				
Rate/1,000 Gallons Sold	\$6.90	\$1,199,569	\$1,479,780	(280,210.72)	(23.36)
Water Service Charge	\$9.00	220,374	416,893	(196,519.35)	(89.18)
Infrastructure Fees	\$4.50	110,187	186,749	(76,561.98)	(69.48)
Total Revenue		\$1,530,130	\$2,083,422	(553,292.05)	(36.16)
Proposed Rates					
			2012		
Rate/1,000 Gallons Sold	\$8.80	\$1,529,885	\$1,479,780	50,105	3.28
Water Service Charge	\$17.00	416,262	416,893	(631)	(0.15)
Infrastructure Fees	\$6.75	165,281	186,749	(21,468)	(12.99)
		\$2,111,428	\$2,083,422	28,005.59	1.33
			2013		
Monthly Average Bills	2082				
Billed MG/Customer/Month	7.1				
Rate/1,000 Gallons Sold	\$8.80	\$1,560,625	\$1,393,368	167,257	10.72
Water Service Charge	\$17.00	416,262	\$387,256	29,006	6.97
Infrastructure Fees	\$6.75	165,281	\$174,316	(9,035)	(5.47)
Total Revenue		\$2,142,168	\$1,954,940	187,227.48	8.74

The proposed rates generate a small cash surplus in 2012; the surplus of \$28,000 is dependent on customer growth and water sales following historical trends. The proposed rate does not have a very large safety factor and does not fund the District's depreciation. In 2013 a larger cash surplus may be generated by the proposed rate if utility customers increase as projected.

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The table shown below compares the present rates average bill to the proposed rates average bill. It is estimated that the proposed rates will increase an average bill by 38%. The proposed average bill is affordable to the median income of about \$51,000 based on the federal government's affordability index.

Present Rates & Sample Bill Calculation

			Units	Service Charges
Water & Sewer Volume Charge	\$6.90	1000/gallons	7	\$48.30
Meter Service Charge	\$9.00	per meter	1	\$9.00
Infrastructure Charge	\$4.50	per unit	1	\$4.50
Monthly Bill				\$61.80

Proposed Rates & Sample Bill Calculation

			Units	Service Charges
Water & Sewer Volume Charge	\$8.80	1000/gallons	7	\$61.60
Meter Service Charge	\$17.00	per meter	1	\$17.00
Infrastructure Charge	\$6.75	per unit	1	\$6.75
Monthly Bill				\$85.35
			38.11	% Increase

Affordable Median Household Income \$51,210

Since the present rates are projecting a deficit for 2011, it is recommended that the proposed rates be implemented as soon as possible.

1 Introduction

Mill Creek is a Master Planned community located in Sections 11, 12, 13, and 24 of Blackberry Township and Sections 18 and 19 of Geneva and Batavia Townships in Kane County, IL, approximately 40 miles west of Chicago. Mill Creek covers over 1400 acres. Over 650 acres (more than 45%) is open space, consisting of 72 acres of parks and 127 acres of wetland preserves. Water, sanitary sewer and storm water service is provided by the Mill Creek Water Reclamation District. Currently the district has over 2000 customers.

The basic principle in the successful operation of water and sanitary sewer systems is that sufficient funds should be generated through the charges for service to provide a self-supporting and self-perpetuating utility. To accomplish this, revenues generated by rates should cover:

- a) Operation and maintenance expense
- b) Principal and interest on outstanding debt
- c) System improvements and replacements

The general concept is that revenue should cover the cost of service to customers and the rates customers are charged should be representative of the service received. The utility must have, or must be shown to have, sufficient revenue to maintain a sound financial condition in the event that is necessary to secure additional capital to meet current and future needs through the sale of bonds or other capital producing measures.

1.1 Purpose

Mill Creek Water Reclamation District (District) authorized the preparation of a study of their water and wastewater rates to determine the adequacy of the existing rates. The objectives of the water and wastewater study are as follows:

The study will forecast water and wastewater revenues and expenses for current and future operating conditions taking into account proposed capital improvements and recent administration changes which resulted in substantial savings to the District customers. The study will determine if the present rates will provide necessary revenue to fund current and future District operations.

The rate study will be prepared in accordance with the generally recognized engineering principles and practices as presented in "Manual M1 Water Rates" published by the American Water Works Association and "Financing and Charges for Wastewater Systems" published by the Water Environment Federation. The charges would be based on functionality and cost of the services provided to the District's customers.

The study will develop a financial model that can be used by the District to forecast revenues and the adequacy of corresponding rate structures as system operating conditions change.

1.2 Scope of Work

The following tasks were completed to prepare the rate study for the District.

Forecasts of costs and the revenue necessary to meet the District's annual needs were prepared after a tour of the District's facilities and review information that describes actual and budgeted financial performance, scheduled capital needs, and customer information as provided by the District and their consultants. .

A financial forecast model, which incorporates operating costs forecasts and known capital improvement funding requirements to test the sufficiency of rate revenue in meeting annual obligations (ongoing expenses, debt service, reserve funding, etc.) and fiscal policies, was developed and used to determine the adequacy of the District's existing rates.

After a deficiency was identified, a rate structure analysis was performed. The rate structure analysis included a review and evaluation of the existing rate structure and possible revisions to ensure charges fully reflect cost of service. The annual capital and operating cost drivers of the water and wastewater system were allocated to functions of service (e.g., customer service, annual flow, peak/seasonal flow, and sewage strength) and to individual customer classes. Allocation factors used for this task were calculated from operating records, customer statistics, industry practice, and staff input.

Rate structures were investigated and a rate structure that reflects the cost of providing service was prepared. The recommended rate structure takes into account the District's existing and future conditions. An impact analysis of the proposed rate comparing and summarizing the impacts to the utility's customers was prepared. The analysis identified changes in the actual bills. After consultation with the District, rate structures were finalized. The finalized rate structure takes into account customer billing information and identified pricing objectives.

A draft report was prepared to document findings of the study and recommend rate structures. The draft report was presented at the District July 2011 monthly meeting. Comments from the District regarding the studies recommendations and findings were received at the July 2011 meeting. Based on the information received at the draft presentation, the final report was prepared incorporating the District comments.

2 Utility Operations and Background Information

The Mill Creek Water Reclamation District (District) provides water, sanitary sewer and stormwater utility services to the Mill Creek Development. In 2010 the District's utility systems had net value of approximately \$19.8 million, adequate rates are required to operate and maintain the value of the utility systems.

2.1 Water System

The water system consists of a source of supply, treatment, system storage and distribution. The sources of water supply for the Mill Creek subdivision are three wells, detailed information regarding the wells is shown in Table 2-1.

**Table 2-1
Water Supply Sources**

Well	Depth [ft]	Casing [in]	Pump [gpm]	Treatment	Operating Permit Issued
No. 1	935	12	450	Ion Exchange	1995
No. 2	871	12	450	Ion Exchange	1998
No. 3	90	12	700	Iron Removal	1998

The District operates an iron removal water treatment plant and ion exchange water treatment system to remove radionuclides; these facilities were added to the system in 2005. Treated water is disinfected with sodium hypochlorite and fluoridated for dental hygiene before being pumped to the 1,000,000 gallon storage tank. Hydropneumatic storage tanks and two high service pumps that operate at 450 and 650 gallons per minute (gpm) maintain system pressure. For peak usage and fire flows there are two additional pumps that operate at 2400 gpm. Storage details and high service pump information are shown in Tables 2-2 and 2-3.

**Table 2-2
Storage Facilities**

Storage Facility	Ground Storage Tank	Hydropneumatic Tanks (3)
Volume [gal]	1,000,000	13,520 (each)
Operating Permit Issued	1996	

**Table 2-3
High Service Pumps**

Pump	1	2	3	4
Horse Power	20	20	75	75
GPM	450	600	2400	2400
TDH	113	87	87	87

There are over 200,000 of feet of water main, 861 valves and 952 fire hydrants in the water supply system. Details of the water distribution system are shown in Table 2-4.

**Table 2-4
Water Main**

Pipe Material Diameter [in]	Ductile Iron						Totals	
	4	6	8	10	12	14		16
Length [LF]	332	10,034	124,095	16,950	32,428	609	851	185,299
Pipe Material Diameter [in]	PVC						Totals	
	6	8	10	12	14	16		
Length [LF]		2,269	12,231	924	8,807	819	53	25,103
Total System Footage								210,402

Table 2-5 is a summary of the water systems operating data from 2006 through 2010. The system experienced a peak day of 2.7 million gallons in 2007, 2007 was also the peak year for system pumpage and water sold measured by billed gallons. During the previous five years average daily demand for the system has ranged from a low 490,000 gallons per day in 2009 to 583,000 gallons per day in 2007.

**Table 2-5
Water Pumpage [million gallons]**

	2006	2007	2008	2009	2010
Average Day	0.563	0.583	0.507	0.490	0.497
Peak Day	2.052	2.697	1.441	1.142	0.530*
Yearly Total	206	213	186	179	181
Billed Gallons	181	202	170	169	177

*based on limited data

Typically a water system should have enough storage to provide water for the average daily demand, the system meets that criteria. The firm pumping capacity of the water system is the pumping capacity with the largest pump out of service; the system has a different firm capacity for the source of supply pumps and the high service pumps. The source of supply well pumps firm pumping capacity is approximately 1.2 million gallons a day. The high service firm pumping capacity is 2400 gpm or approximately 3.4 million gallons a day. After reviewing the operating data and the system facilities it appears that the facilities are sufficient to provide adequate service to the customers of the District.

2.2 Sanitary Sewer System

The sanitary sewer system includes collection, lift stations, treatment and land application. The collection system includes gravity sewer and force main detailed in Table 2-6.

**Table 2-6
Wastewater Force Main**

Pipe Material	Ductile Iron					
Diameter [in]	4	6	8	12		
Length [LF]	2,341	2,975	10,178	2,975		
Total Force Main Footage [LF]						18,469
Gravity Collection System						
Pipe Material	PVC					
Diameter [in]	6	8	10	12	15	
Length [LF]	994	122,033	21,233	3,561	1,485	
Total Gravity System Footage [LF]						149,306
Total System Footage [LF]						167,775

The lift stations are described in Table 2-7.

**Table 2-7
Lift Stations**

Lift Station	Type	Number of Pumps	Type of Pump	Size of Pump [gpm]	Max Capacity [gpm]
No. 1	Triplex	3	4" Submersible	760	2,280
No. 2	Duplex	2	4" Submersible	862	1,724
No. 3	Duplex	2	4" Submersible	614	1,228
No. 4	Duplex	2	4" Submersible	190	380
No. 5	Duplex	2	4" Submersible	150	300
No. 6	Duplex	2	4" Submersible	440	880

The treatment includes two aerated lagoons for wastewater treatment, sand filters for finishing and the final part of the process is land application for irrigation of the golf course and other landscaping in the development.

Table 2-8 is a summary of the wastewater systems operating data from 2006 through 2010. The system experienced a peak day of 1.5 million gallons in 2008, 2009 was the peak year with 162 million for system pumpage. During the previous five years average daily pumpage for the system has ranged from a low of 355,000 gallons per day in 2006 to 444,000 gallons per day in 2009. Wastewater service revenues come from billed water provided by the water system. Comparing Table 2-5 and Table 2-8 wastewater utility pumpage was at its peak in 2009 and billed water service was at its lowest point in the previous five years.

Table 2-8
Wastewater Pumpage [million gallons]

	2006	2007	2008	2009	2010
Yearly Total	129	135	151	162	160
Average Day	0.355	0.370	0.412	0.444	0.440
Peak Day	0.529	0.679	1.527	0.821*	0.894*

* based on limited data

After reviewing operating data, two points can be made; the first is that the District has a heavy irrigation demand for lawn maintenance. The second point that can be made is that rates have to be sufficient to operate the wastewater system during periods of low water system demands when revenue generation is below average. During wet weather wastewater disposal charges tend to account for a larger proportion of systems variable expenses.

3 Present Rates and Format

The present Mill Creek Water Reclamation District (District) rates were put into effect in 2008. The rates are a water and sewer volumetric charge, a service charge and an infrastructure charge. The volume charge is for water delivered to the customer and sewage contributed to the collection system based on their water meter reading which is billed monthly. The volumetric charge for water and sewer service is a flat rate of \$6.90 per thousand gallons billed. The service charges \$9.00 per 1 inch meter and increases with the meter size. The infrastructure charge is \$4.50 per residential unit. Table 3-1 illustrates the present rates and the typical customer's monthly charge, for a customer who uses approximately 235 gallons per day.

**Table 3-1
Present Rates & Sample Bill Calculation**

			Units	Service Charges
Water & Sewer Volume Charge	\$6.90	1000/gallons	7	\$48.30
Meter Service Charge	\$9.00	per meter	1	\$9.00
Infrastructure Charge	\$4.50	per unit	1	\$4.50
 Monthly Bill				 \$61.80

3.1 Billed Water Usage and Revenue Adequacy

The development of utility rates to serve the future must be based upon the experience of the past and adjusted for anticipated changes which may occur and have an impact on the viability of utility charges be developed. Estimates of future water usage were developed after an examination of the last five years of gross billed water consumption and customer records provided by Lord and Murphy. During the past five years the Mill Creek service area has been subject to periods of unusually difficult economic times. The recession affected the rate of customer growth in the district. The five-year period for past records was selected to encompass periods of drought and wet weather as well as economic conditions.

**Table 3-2
Customer Data Historical and Project Revenues and Expenses**

Year	2006	2007	2008	2009	2010	2011	Projected 2012
Customer Data							
Billed Million Gallons	181	202	170	169	177	170	173
Year End Bills	1781	1895	1966	1998	2039	2080	2121
New Customers		114	71	32	41	41	41
Monthly Average Bills	1709	1844	1930	1981	2020	2060	2101
Billed MG/Customer/Month	8.828	9.129	7.356	7.111	7.292	7.100	7.100
Operating Revenues							
Rate/1,000 Gallons Sold	\$5.30	\$5.75	\$6.90	\$6.90	\$6.90	\$6.90	\$6.90
Water Sales	\$966,086	\$1,174,306	\$1,179,195	\$1,165,635	\$1,223,437	\$1,175,466	\$1,199,569
Water Service Charges	182,866	199,803	207,210	217,278	214,968	215,946	220,374
Infrastructure Fees	-	-	104,946	109,534	123,089	107,973	110,187
Other User fees	79,738	108,773	109,518	105,738	109,535	89,750	87,050
Meter charges	126,750	85,550	51,750	42,500	28,858	25,000	25,000
Total Operating Revenues	\$1,355,440	\$1,568,432	\$1,652,620	\$1,640,685	\$1,699,886	\$1,614,135	\$1,642,180
Operating Expenses							
Operations	\$1,319,191	\$1,399,112	\$1,378,533	\$1,335,909	\$1,342,416	\$1,311,300	\$1,317,365
Administration	167,302	166,378	225,076	271,835	279,573	426,321	371,137
Total Operating Expenses	\$1,486,493	\$1,565,490	\$1,603,609	\$1,607,744	\$1,621,989	\$1,737,621	\$1,688,502
Operating Income (Loss)	(\$131,053)	\$2,943	\$49,011	\$32,941	\$77,897	(\$123,486)	(\$46,322)
Non-operating revenues							
Investment income	\$6,580	\$4,254	\$2,997	\$1,363	\$4,825	-	-
Property taxes	28,050	30,338	30,338	30,338	33,200	33,200	33,200
Miscellaneous income	100	22769	75	635	0	7500	7500
Total non-operating revenues	\$34,730	\$57,361	\$33,410	\$32,336	\$38,025	\$43,180	\$40,700
Non-operating Expenses							
Interest expense	\$40,914	\$35,295	\$36,771	\$37,155	\$38,075	\$37,000	\$26,462
Principal Payments	257,339	187,343	202,471	278,164	246,484	11,364	35,619
General Installment Contracts						20,000	408,100
Total Non-operating Expense	\$298,253	\$222,638	\$239,242	\$315,319	\$284,559	\$68,364	\$470,181
Net To Retained Earnings	(\$394,576)	(\$162,334)	(\$156,821)	(\$250,042)	(\$168,637)	(\$148,670)	(\$475,803)

Table 3-2 summarizes revenue and customers over the past five years and projects revenues for 2011 and 2012. 2010 records indicate that the District has approximately 2,000 customers, which had a total billed water consumption of approximately 177 million gallons, with an average yearly consumption per account of 87,000 gallons per year or 7,300 gallons per month. Currently there are approximately 100 multifamily units being served by the District's system. Multifamily units produce less revenue and use less water per account than the single-family customers. Multifamily customers will be counted as 4/10 of the customer for projecting revenues. Customer records shown in the projections will be adjusted to reflect the ratio between single-family and multifamily customers.

Rate study forecasts should be conservative with regard to estimates of customer billed water consumption and the resulting revenues. It is more desirable to have a surplus of funds due to a conservative forecast than to have a deficit due to rates that have been developed on optimistic forecasts. Estimated future revenue is calculated by multiplying the estimated average revenue per customer account by the total estimated number of future customers. Average revenue per customer is the average billed water per customer account times the volumetric charge plus the service charge and infrastructure charge. System revenues are a function of the number of customers and consumption per customer. New customers to the system during the past five years range from a high of 114 customers in 2007 to a low of 32 customers in 2009, 2010 had 41 new customer accounts. Billed water per account ranged from 9,100 per month to 7,100 per month in 2009. For projecting revenues 41 new customers to the system per year with an average of 7,100 gallons per month of billed water was used.

The current 2011 District budget is the basis for the 2011 expenses shown on Table 3-2. A review of past District system budgets, audit records and the current 2011 budget was performed before 2012 expenses were estimated. The result of a comparison of estimated revenues to the projected expenses for 2011 and 2012 is that the current rates are not adequate. Projected operating results for 2011 showing deficit of about \$123,500, when non-operating revenues and expenses are added the deficit grows to about \$148,700. This projection makes a provision for the general installment contract with Mill Creek's developer which is disputed, there is an approximately \$400,000 payment due in September 2011. If the payment for the general installment contract is renegotiated and full payment is required in 2012, 2012 has a serious deficit. The existing rates do not provide adequate revenue for operations in 2012.

4 Revenue Requirements Discussion

Because the Mill Creek Water Reclamation District operates a publicly owned utility and the utilities services benefit the Mill Creek development residents and the utilities governed by residents of the utility district, a cash needs approach can be used for projecting revenue requirements. The utility requires cash to meet its financial obligations which include operation and maintenance, administration expenses, as well as system capital improvements and debt service. In addition to debt service the District has an installment contract with the developer of the community to pay back unpaid wastewater disposal fees and to purchase portable irrigation stations.

4.1 Operation Expense

Operation expense is the cash outlay required annually for the operation and maintenance of the utility systems, the utility systems were described in Section 2 of this report. Table 4-1 shows the detailed estimated operating expenses for 2012 which were summarized in Table 3-2. The left-hand column shows the current account numbering system for each of the expenses. Expenses were estimated using the methodology discussed in Section 3 of this study. Operation expense is directly related to delivering water to the customer and collecting wastewater. Expenditures for energy and chemicals are in direct proportion to the water demand of the system. Said another way, the greater amount water needs to be pumped into the system requires more energy and chemicals to be paid for. It should be noted there are no employee expenses the District contracts for system operations and administration. \$35,000 of \$66,500 in Account 625.0 Meter Install and Office Management is for a meter replacement program, it is estimated that replacement program will cost \$105,000 and will come be completed over three year period.

Table 4-1

2012 Estimated O&M Expense - Operations

616.0	Water System Support Service	\$5,250
625.0	Meter Install/Office Management	66,500
641.0	S&R 985.1 WWOM Wastewater O&M	378,000
	Water Quality Testing	5,250
624.0	Billing Service	52,500
609.2	JULIE Hours-RB	3,360
670.0	Electricity	252,000
670.1	Natural Gas	3,150
605.1	Fuel Oil	630
680.0	Telephone-Operations	17,325
604.0	Repairs & Maintenance	84,000
605.4	Equipment Rentals	31,500
610.0	Small Tools-Supplies	26,250
654.0	Ion Exchange Softener Supplies	126,000
613.0	Landscaping Maintenance	7,350
641.5	WWTR Irrigation System O/M	210,000
	Total-Operations	\$1,317,365
	Operations Reserve Fund	\$162,415
	Total Required Operations Revenue	\$1,479,780

At the bottom of Table 4-1 is a line item named operations reserve fund, the operations reserve fund is 45 days of operating expenses. It is recommended practice to have on hand 45 days of reserve in case of a situation where the utility is unable to bill its customers, the reserve would allow the utility to continue to pay its bills and provide service without disruption. Operating expenses should be paid for from revenue generated by variable sales, such as a volumetric charge, since operation expenses will theoretically vary with system demands.

4.2 Administration Expense

Administration expenses are the expenses associated with providing service to the systems customers. Included in these expenses are customer accounting and collections. Generally administrative expenses are incurred even if there are no sales to customers. Administration expenses tend to be fixed in nature and do not vary greatly with the amount of service provided. Table 4-2 is the detailed listing of the administration expenses summarized in Table 3-2. Projection of expenses were done using the same methodology described in Section 3.2

Table 4-2

2012 O&M Expense Administrative		
641.0	S&R 985.1 WWOM Wastewater O&M	\$90,000
702.0	Legal Notices	\$1,523
712.0	Lockbox Fees, Bank Charges	28,350
720.0	Board Remuneration	9,450
754.0	Dues & Subscriptions	893
756.0	Meeting Expenses	3,150
790.0	Insurance-GL	32,550
791.0	Insurance-Officials Liability	1,575
811.0	Office Expense and Postage	21,000
811.5	Postage and Mailings	17,850
850.0	Audit Fees	11,550
852.0	Accounting/Consulting	31,500
855.0	Legal Fees	18,000
856.0	Legal Fees-Special Projects	15,750
860.0	Gross Wages	18,900
880.0	FICA Expense	1,470
884.0	SUTA Expense	126
999.0	Unallocated Expense	63,000
	Total-Administrative	\$371,137
	Administrative Reserve Fund	\$45,757
	Total Required Admin. Revenue	\$416,893

Because administration expenses are generally fixed, revenue for administration expenses should be collected using a fixed charge per customer, such as a meter charge.

4.3 Debt Service & Installment Contracts

The District received a loan from the Illinois Environmental Protection Agency in 2000 to improve water quality, the loan has an interest rate of 2.675% per year and a payment schedule of \$15,609 for principal and interest paid in semiannual installments.

Table 4-3

2012 Non-operating Expenses - Debt Service	
Interest expense	\$8,032
Principal Payments	35,619
General Installment Contract	143,098
Total Non-operating Expense	\$186,749

The District's audited financial records list three general installment contracts with the developer of Mill Creek the contracts are disputed and are for allegedly unpaid wastewater disposal fees. The resolution of the dispute is unknown at this time, for that reason provisions will be made for the contract debt, however making the provisions for the contract debt does not constitute an acknowledgment by the District that it owes the debt to the developer. The payments on the 2000 through 2004 debt are amortized over a 20 year period using 6% interest with equal monthly installments of \$2,634. The second general installment contract is for wastewater disposal fees payable for 2006 through 2010, the balance of the unpaid wastewater disposal fees is accruing 6% interest annually. This study assumes that the payment of this debt can be renegotiated and paid off using a payment schedule amortized over five years with 6% interest with payments starting in 2012. The third general installment contract is for the purchase of portable irrigation stations. The installment contract is scheduled to be paid over a five-year period using 6.5% interest and equal monthly installments of \$924. Debt service normally is not a variable cost, once the money has been borrowed it has to be repaid, even if not one gallon of water has been billed, for this reason it is desirable to pay for debt service with a fixed charge per customer.

There is some uncertainty as to how much revenue will be required for debt service; \$186,749 is the best estimate of debt service requirements available at this time. Rates are expected not to generate surpluses until 2013, so if debt service is slightly overestimated this could help the financial position of utility, on the other hand underestimating the debt service generates even more deficits for the utility.

4.4 Cost Allocations

AWWA Manual M1, Principles of Water Rates, Fees and Charges recommends that the fixed charges recover costs such as meter reading billing costs and other costs that the utility incurs equally per customer or per account through a service charge or customer charge. The variable expenses should be recovered using a consumption charge or volumetric charge, the amount the customer pays varies based on the amount of water the customer consumes. Expenses categorized as being caused by operations should be recovered with a volumetric charge. Expenses categorized as administrative should be recovered using a service charge per customer.

Debt service does not vary due to system demands, because of this and since the customers of the District have similar characteristics, it is recommended that debt service and general installment contract payments be recovered with a fixed charge similar to the existing infrastructure charge.

5 Design of Rate Schedules

To design utility service rates, units of service have to be defined and costs allocated to the defined units of service. Mill Creek Water Reclamation District (District) has been using three units of service to bill its customers, volumetric charge per thousand gallons, service charge and infrastructure charge.

Table 5-1 Rate Design compares the required revenues discussed in Section 4 and the adequacy of the present and proposed rates. At the top of Table 5-1 Rate Design the present rates and the revenue generated by the present rates are shown in the second and third columns, the fourth column is the required revenue for each of the units of service and the fourth and fifth column describe the deficiency of the present rates.

		Table 5-1 Rate Design			
		Generated Revenue	Required Revenue	Deficiency	%
		Deficient			
Present Rates					
Monthly Average Bills	2041				
Billed MG/Customer/Month	7.1				
Rate/1,000 Gallons Sold	\$6.90	\$1,199,569	\$1,479,780	(280,210.72)	(23.36)
Water Service Charge	\$9.00	220,374	416,893	(196,519.35)	(89.18)
Infrastructure Fees	\$4.50	110,187	186,749	(76,561.98)	(69.48)
Total Revenue		\$1,530,130	\$2,083,422	(553,292.05)	(36.16)
Proposed Rates					
			2012		
Rate/1,000 Gallons Sold	\$8.80	\$1,529,885	\$1,479,780	50,105	3.28
Water Service Charge	\$17.00	416,262	416,893	(631)	(0.15)
Infrastructure Fees	\$6.75	165,281	186,749	(21,468)	(12.99)
		\$2,111,428	\$2,083,422	28,005.59	1.33
			2013		
Monthly Average Bills	2082				
Billed MG/Customer/Month	7.1				
Rate/1,000 Gallons Sold	\$8.80	\$1,560,625	\$1,393,368	167,257	10.72
Water Service Charge	\$17.00	416,262	\$387,256	29,006	6.97
Infrastructure Fees	\$6.75	165,281	\$174,316	(9,035)	(5.47)
Total Revenue		\$2,142,168	\$1,954,940	187,227.48	8.74

The center of Table 5-1 under proposed rates compares the revenue generated by the rates and the required revenue discussed in Section 4. The proposed rates generate a small cash surplus of \$28,000 in 2012. The proposed rate structure recognizes that the Mill Creek Water Reclamation District Board has made changes to the operations and is trying to find efficiencies wherever they can and that they do not want to raise rates higher than is absolutely necessary. The rate design assumes customer growth will be steady at 41 additional customers per year. The rate design projects a cash a modest surplus \$187,200 in 2013 to fund the reserves, depreciation will not be funded until reserves sufficiently provide the utility with a safety factor for operations.

This study **will not** compare the resulting rate structure with that of other utilities because the circumstances of providing service for each utility are unique. Source supply water quality, depth to supply, customer mix, topography of the service area can be very different for each utility, so comparing rates between utilities that are not similar in topography, customer base and water quality is not a fair comparison. This study will address affordability however, for comparison, the national average affordability index is approximately around 1.0 each for water and sewer rates, an affordable index of 1 for each of the services provided is considered affordable. Generally, grant agencies target an affordability index of 2.0 for just the water or sewer bill before they will offer a grant to a utility. In the District’s case the combined water and sewer rate would be considered affordable if the ratio of the average water bill divided by monthly median household income is less than 2%.

Table 5-2 compares sample bills for the present rates in the proposed rates.

**Table 5-2
Present Rates & Sample Bill Calculation**

			Units	Service Charges
Water & Sewer Volume Charge	\$6.90	1000/gallons	7	\$48.30
Meter Service Charge	\$9.00	per meter	1	\$9.00
Infrastructure Charge	\$4.50	per unit	1	\$4.50
 Monthly Bill				 \$61.80

Proposed Rates & Sample Bill Calculation

			Units	Service Charges
Water & Sewer Volume Charge	\$8.80	1000/gallons	7	\$61.60
Meter Service Charge	\$17.00	per meter	1	\$17.00
Infrastructure Charge	\$6.75	per unit	1	\$6.75
 Monthly Bill				 \$85.35
			38.11	% Increase

Affordable Median Household Income \$51,210

The proposed rates will increase the average water and sewer bill by 38%; based on the affordability index the rates are affordable to a median household income of \$51,200.

6 Recommendations

An information sheet which explains Mill Creek Water Reclamation District's (District) charges for services provided should be prepared for new system customers and customers who have inquiries about charges for service. After an analysis of projected revenues for 2011 a comparison of those revenues to 2011 expenses is recommended the present rates be implemented as soon as possible.

6.1 Implementation Plan

The implementation plan will be developed in consultation with the Mill Creek Water Reclamation District Board, ultimately the timing and the amount of the rate increase is at the discretion of the Board. (This section may be modified based on results of meetings with the utility board.)

7 References

“Financial Statements and Independent Audit Report for Year Ended December 31, 2006”
Prepared by Sikich LLP Certified Public Accountants & Advisors

“Financial Statements and Independent Audit Report for Year Ended December 31, 2007”
Prepared by Sikich LLP Certified Public Accountants & Advisors

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Prepared by Sikich LLP Certified Public Accountants & Advisors

“Mill Creek Subdivision Wastewater Reclamation and Reuse System Engineering Report” latest revision April 28, 1994, Prepared by Sheaffer & Roland Inc.

“Mill Creek Subdivision Water Supply System Engineering Report” latest revision December 16, 1994, Prepared by Sheaffer & Roland Inc.

“Principles of Water Rates, Fees and Charges Manual M1” published by the American Water Works Association

“Financing and Charges for Wastewater Systems Manual of Practice No. 27” published by the Water Environment Federation

Appendix

Mill Creek Water Reclamation District Summary of Proposed Charges 2012

Charge	Charge Amount
Utility Rates	
Note: Water & Sewer Charges are combined on bill as a single usage charge	
Water & Sewer	8.80 per 1000 Gallons
Monthly Fixed Service Charges	
Note: Residential Water Service Charge & Sewer Service Charge are combined on bill as "Residential Charge"	
Water & Sewer	Monthly Charge = 17.00 times number of units
Infrastructure Fee	Monthly Charge = 6.75 times number of units
Monthly Variable Service Charges	
Commercial SC	For commercial accounts only
Note: Based upon Size of Meter	
	1.0" = 17.00
	1.5" = 50.00
	2.0" = 85.00
	3.0" = 170.00
Fire Protection Fee	Where fire meter size is specified
Note: Based upon Size of Meter	
	1.0" = 9.00
	2.0" = 50.00
	2.5" = 50.00
	4.0" = 500.00
	6.0" = 500.00
Penalty & Interest	
Water & Sewer Penalty Interest Charge	If Amount Due is Greater than Zero, Charge 10% of Water amount on last bill Charge 10%/year on Amount Due (Before Penalty is Applied)
Misc Charges	
New Account Setup	Billed 25.00 for each start-up: Billed with new resident when house is sold
Final Inspection	Bill 60.00 for seller at every Final; Not applied to builders;
Returned Check Fee	25.00 per incident as specified by Mill Creek
Service Call	Billed as specified by Engineering Firm
New Meter Charge	Billed as specified by Engineering Firm