

**Management and Process Audit of
Martin County Water District**

For the
Kentucky Public Service Commission

FINAL REPORT

March 19, 2007

Barrington-Wellesley Group, Inc.

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CHAPTER I

INTRODUCTION AND EXECUTIVE SUMMARY

A. Introduction and Background

On August 1, 2006, the Kentucky Public Service Commission (KPSC or Commission) issued a Request for Proposal for a consulting firm to complete a management and process audit of the Martin County Water District (MCWD or District). The primary objective of this audit was to determine what improvements can be made in the management and operation of MCWD's water system, as well as to assess MCWD's financial condition and its possible need for a rate adjustment. The Barrington-Wellesley Group, Inc. (BWG) was awarded the contract for this study, which commenced on October 30, 2006.

MCWD is a rural water district whose offices are located in Inez, Kentucky (Inez). Martin County comprises MCWD's total service territory - an area of 231 square miles. For the year ending December 31, 2006, MCWD had total operating revenues of \$1.1 million, 3,512 customers, and 173.5 miles of mains. In 2006, the District produced and purchased 601.3 million gallons of water. Water sales during 2006 totaled 271.0 million gallons. Water loss was fifty-one percent of water produced and purchased in 2006.

Exhibit I-1 presents the District's summary income statements for fiscal years 2001 through 2006 and **Exhibit I-2** presents the District's summary balance sheets as of December 31 for fiscal years 2001 through 2006.

Exhibit I-1 MCWD Summary Income Statements 2001 - 2006

	2006	2005	2004	2003	2001
Operating Revenues	\$1,135,790	\$1,067,083	\$1,158,589	\$1,156,159	\$969,744
Total Operating Expenses	1,032,404	1,060,279	1,038,067	993,460	700,822
Operating Margin (EBITDA)¹	103,386	6,804	120,522	162,699	268,922
Depreciation Expense	552,015	527,490	531,518	539,450	355,784
Taxes Other than Income Taxes	35,069	37,392	38,471	0	28,472
Utility Operating Income	(483,698)	(558,078)	(449,467)	(376,751)	(115,334)
Other Income (Deductions)	746	1,261	521	1,550	11,076
Interest Expense	115,644	116,924	101,736	105,498	110,265
Net Income	\$(598,596)	\$(673,741)	\$(550,682)	\$(480,699)	\$(214,523)

Source: Annual Reports filed with the KPSC and BWG analysis

Exhibit I-2
MCWD Summary Balance Sheets
2001 - 2006

	2006	2005	2004	2003	2002	2001
Assets and Other Debits						
Utility Plant	\$21,809,147	\$20,633,853	\$19,150,007	\$18,415,244	\$18,240,156	\$17,986,661
Accumulated Depreciation	7,008,728	6,456,713	5,929,223	5,397,705	4,858,255	4,423,591
Net Utility Plant	14,800,419	14,177,140	13,220,784	13,017,539	13,381,901	13,563,070
Cash	72,823	54,465	52,366	86,868	129,376	49,594
Accounts Receivable	304,887	258,923	278,695	216,941	113,607	102,666
Total Current and Accrued Assets	534,676	456,599	493,294	386,750	321,880	235,354
Total Assets and Other Debits	\$15,446,612	\$15,164,320	\$13,927,789	\$13,598,542	\$13,974,694	\$14,232,185
Equity Capital and Liabilities						
Retained Earnings	\$(5,353,911)	\$(4,755,315)	\$(4,081,574)	\$(3,530,892)	\$(3,050,193)	\$(2,605,303)
Donated Capital / CIAC	17,293,679	16,720,939	14,966,046	14,197,636	13,996,723	13,880,154
Long-Term Debt	2,479,108	2,570,464	2,608,436	2,538,555	2,614,853	2,688,859
Accounts Payable	531,030	260,724	301,257	223,571	270,782	96,411
Total Current and Accrued Liabilities	1,027,736	628,232	434,881	393,243	413,311	268,475
Total Equity Capital and Liabilities	\$15,446,612	\$15,164,320	\$13,927,789	\$13,598,542	\$13,974,694	\$14,232,185

Source: Annual Reports filed with the KPSC and BWG analysis

As can be seen from the above financial information, the financial condition of the District has deteriorated since 2001. Utility operating margins, represented by earnings before interest, taxes, depreciation and amortization (EBITDA), decreased from \$269,000 in fiscal 2001 to \$103,000 in fiscal 2006. Net income decreased from \$(215,000) to \$(599,000) during this same period. At the same time, accounts receivable increased from \$103,000 in 2001 to \$305,000 in 2006, driven primarily by increases in past due accounts receivable. Accounts payable, which increased by \$435,000 from December 31, 2001 to December 31, 2006, provided a source of funds to the District. The increase in gross utility plant of \$3.8 million during this period was funded almost exclusively by the increase in donated capital (previously referred to as contributions in aid of construction) by \$3.4 million.

¹ Earnings before interest, taxes, depreciation and amortization. EBITDA is a commonly used measure of financial condition.

Exhibit I-3 presents actual to budget results for 2005 and 2006.

Exhibit I-3
Summary Actual to Budget Results
Fiscal Years 2005 and 2006

	2005			2006		
	Budget	Actual	Variance	Budget	Actual	Variance
Operating Revenues	\$1,214,000	\$1,067,083	\$(147,087)	\$1,440,000	\$1,135,790	\$(304,210)
O&M Expenses	753,520	1,060,279	(247,313)	1,264,230	1,032,404	231,826
Operating Margin	460,480	6,804	(453,676)	175,770	103,386	(72,384)
Depreciation Expense	500,000	527,490	(27,490)	535,000	552,015	(17,015)
Taxes Other Than Income Taxes	20,795	37,392	(16,597)	42,000	35,069	6,931
Interest Income	500	1,261	761	400	746	346
Interest Expense	105,500	116,924	(11,424)	110,500	115,644	(5,144)
Net Income	(165,315)	(673,741)	(508,426)	(511,330)	(598,596)	(87,266)
Capital Contributions	700,000	1,754,893	1,054,893	850,000	572,740	(277,260)
Change in Net Assets	\$534,685	\$1,081,154	\$546,467	\$338,670	\$(25,856)	\$(364,526)

Source: MCWD Budgets and Budget Variance Reports

Actual O&M expenses in 2005 were 40.7 percent higher than budget, but only 2.1 percent higher than 2004. The 2005 over budget variances occurred in numerous budget line items. Actual O&M expenses in 2006 were 18.3 percent under budget and 2.6 percent lower than 2005.

Exhibit I-4 on the following page presents the District's Fiscal 2007 budget and compares the amounts budgeted to both Fiscal 2006 actual and budgeted results.

Exhibit I-4
Fiscal 2007 Budget Summary and Comparison

	Fiscal 2006		Fiscal 2007		
	Budget	Actual	Budget	Variance From 2006 Budget	Variance From 2006 Actual
Operating Revenues	\$1,440,000	\$1,135,790	\$1,597,000	\$157,000	\$461,210
Total Operating Expenses	1,264,230	1,032,404	1,326,300	62,070	293,896
Operating Margin (EBITDA)	175,770	103,386	270,700	94,930	167,314
Depreciation Expense	535,000	552,015	560,000	25,000	7,985
Taxes Other Than Income Taxes	42,000	35,069	47,000	5,000	11,931
Utility Operating Income	(401,230)	(483,698)	(336,300)	64,930	147,398
Interest Income	400	746	500	100	(246)
Interest Expense	110,500	115,644	115,700	5,200	56
Net Income	(511,330)	(598,596)	(451,500)	59,830	147,096
Capital Contributions	850,000	572,740	1,250,000	400,000	677,260
Change in Net Assets	\$338,670	\$(25,856)	\$798,500	\$459,830	\$824,356

Source: Budget Summary of Martin County Water District

Fiscal 2007 budgeted revenues exceed Fiscal 2006 actual revenues by 40.6 percent. Fiscal 2007 budgeted operating expenses exceed Fiscal 2006 actual operating expenses by 28.5 percent and Fiscal 2006 budgeted expenses by 4.9 percent. The budgeted Net Loss for Fiscal 2007 is 24.6 percent less than the actual Net Loss for Fiscal 2006. The increase in operating revenues is due to the anticipated rate increase associated with the RD loan.

Compared to Fiscal 2001 actual results, the compound annual growth rate (CAGR) for revenues is 8.7 percent and for operating expenses is 11.2 percent. For these same periods, the CAGR for revenues and operating expenses on a “per customer” basis are 7.03 percent and 9.54 percent, respectively.

During the period from 2002 to 2004, MCWD experienced significant changes in its management personnel. In 2002 several members of the MCWD Board of Commissioners (Board) resigned or left due to the expiration of their terms. New members were appointed to replace these members. In 2003 the Martin County Judge Executive removed the new members appointed in 2002 and appointed others in their place.

In 2002, the Board executed an agreement with American Water Services, Inc. to manage and operate MCWD’s water treatment and distribution system. In late 2003, the Board began questioning the appropriateness of several bills for water system repairs that American Water Services submitted. The Board also expressed dissatisfaction with MCWD’s

contract with American Water Services and sought to renegotiate several of its terms. Relations between the Board and American Water Service continued to deteriorate in 2004. At one point, American Water Services asserted that MCWD was over \$600,000 delinquent in payments for repairs and monthly fees. Ultimately MCWD and American Water Services agreed to the early termination of the management services agreement and MCWD resumed responsibility for the operation of its water treatment and distribution system in 2004.

While these changes were going on, the Commission was conducting its own series of inspections and investigations of District operations, facilities and records. Staff's April 4, 2002 Utility Inspection Report described the District's water treatment plant as "in a general state of disrepair." Following the issuance of this report the Commission initiated an investigation to address the conditions reported and the long-term actions necessary to ensure the continuity of service to the District's customers. The Commission expanded the scope of its investigation following a July 1, 2002 hearing on the condition of the District's water treatment plant to include the assessment of "the current condition of Martin District's operations and management, to determine the rules, methods, and the practices that are required to ensure the water district provides adequate and reasonable service, and to restore public confidence in the water district's operations."

In response to this investigation, the Commission and District management entered into a settlement agreement in which the District agreed to take the following extensive actions:² The settlement agreement was accepted by the Commission on November 13, 2003.

- Prepare a long-range plan for the provision of water service
- Develop a program for testing water meters
- Develop a safety program
- Develop a written inspection procedure to assure a safe and adequate operation of the District's system components and facilities
- Develop a program to test the District's flush hydrants
- Develop a program for charting, inspecting and exercising distribution system valves
- Maintain inspection records
- Maintain a record of customer complaints
- File monthly status reports
- Develop a water shortage response plan
- Develop a plan for installing, repairing and maintaining a functioning telemetry system
- Repair its radio signaling equipment
- Develop a plan for inspecting all water storage tanks
- Complete a preliminary engineering and operational review of its facilities and system

² Settlement Agreement in Case No. 2002-00116 dated October 20, 2003 between the Staff of the PSC of Kentucky and the Martin County Water District.

- Review security at all facilities
- Make all necessary improvements and repairs to enable automatic control of all pumping stations equipped with automatic controls
- Report on its plan to install a new billing system
- Implement procedures and controls designed to improve the accuracy of monthly meter readings, and provide training on the detection of water leaks and theft of water service
- Cease computing a late payment charge on taxes for water service
- Review all customer accounts to ensure that sales tax is collected for all accounts who have not provided a tax exemption certificate
- Bill all sewer customers
- Uniformly assess and charge all fees for services included in its filed rate schedules
- Develop and implement appropriate cash management procedures
- Perform timely bank statement reconciliations
- Document the Board of Commissioners review of proposed disbursements
- Elect a Treasurer who will sign all checks
- Implement appropriate procedures for the review of invoices prior to payment
- Develop internal controls to ensure that work orders are completed
- Install and connect services within Administrative Regulation required time periods
- Pay interest on customer deposits
- Prepare annual operating budgets
- File Annual Reports for 2001 and 2002
- Discontinue water service to customers failing to pay their bills on time
- Require members of the District's Board of Commissioners to attend at least 12 hours of certified water district commissioner training biennially with expenses to be reimbursed by the District
- Reaffirm its code of ethics for the members of the Board of Commissioners
- Reaffirm its adoption of the provisions of KRS 45A.343 to 45A.460 to govern its procurement decisions.
- Review the use of the county attorney to provide legal services to the District
- Develop written emergency planning procedures
- Develop written leak detection procedures, including meaningful monthly water loss reports
- Develop and implement written procedures and policies for the hiring, evaluation and retention of employees

- Develop and maintain an up-to-date distribution system map
- Comply with all regulations and requirements of the Kentucky Cabinet for Natural Resources and Environmental Protection

On July 28, 2004 and May 10, 2005, the Commission issued reports of periodic facilities inspections completed on July 21, 2004 and January 10-11, 2005, respectively. These inspections continued to identify deficiencies – eleven in the 2004 report and twelve in the 2005 report. Some of these were repeat deficiencies. The remaining deficiencies noted in the 2005 report include:

- Water loss exceeds fifteen percent (it likely exceeds fifty percent) (repeat deficiency)
- Master meters not tested (repeat deficiency)
- Interest on deposits not accrued properly
- Customer complaint files not complete
- Fire hydrant minimum fire flow requirements not certified (repeat deficiency)
- Recording pressure gauge not properly maintained
- Service pressures below minimum required pressure in some areas (repeat deficiency)
- Commission not properly notified of public notifications and boiled water advisories (repeat deficiency)
- Not in full compliance with DOW’s requirements
- Customer reported potentially hazardous condition
- Clearwell water storage facility in need of maintenance (repeat deficiency)
- Annual reports not filed for 2002 and 2003 (repeat deficiency)

Taking timely action on all items agreed to in the settlement agreement requires resources not readily available to the District. The District could have, but has not, pursued an increase in revenues by filing a general rate case with the Commission. However, the filing of a rate case is complicated, in part because Kentucky Administrative Regulations do not allow the recovery of the cost of unaccounted-for-water exceeding fifteen (15) percent, thus creating the dilemma the District currently faces.³ That is, the District does not have the resources required to make the investments needed to reduce water loss but cannot obtain the revenues required to make those investments because its water loss is too high without making a special request to the Commission. In the past, the Commission has authorized a surcharge to address water loss problems. As an example, in “An Investigation into the Operations and Management of Mountain Water District,” Case No. 96-126 Order dated

³ The regulation does allow the utility to request and the Commission to grant exceptions to the 15 percent rule. KAR 5:066 (3) Unaccounted-for water loss. Except for purchased water rate adjustments for water districts and water associations, and rate adjustments pursuant to KRS 278.023(4), for rate making purposes a utility's unaccounted-for water loss shall not exceed fifteen (15) percent of total water produced and purchased, excluding water used by a utility in its own operations. Upon application by a utility in a rate case filing or by separate filing, or upon motion by the commission, an alternative level of reasonable unaccounted-for water loss may be established by the commission. A utility proposing an alternative level shall have the burden of demonstrating that the alternative level is more reasonable than the level prescribed in this section.

August 11, 1997, the Commission found and ordered that the Mountain Water District should be authorized to assess a surcharge of \$0.45 per thousand gallons for a period not to exceed three years, or until \$831,675 has been collected. The proceeds of the surcharge were ordered to be invested in a separate interest bearing account and used solely for line loss reduction efforts.

B. Objectives of the Audit

MCWD faces significant financial and operational challenges. Previous Commission Staff inspections and financial reviews revealed poor recordkeeping practices and an absence of significant internal management, budgeting and financial controls. They also indicated significant operational problems, including excessively high levels of water loss, inadequate meter reading and testing programs, poor equipment and plant maintenance practices, and a persistent inability to comply with regulatory requirements. Customer complaints of poor water quality and service pressure in the period from 2002 through 2005 support these findings. The absence of any adjustment in MCWD's general service rates since 1996, moreover, raises concerns that MCWD's present rates are not producing revenues sufficient to allow MCWD to provide adequate and reasonable service.

The primary objective of this audit is to determine what improvements can be made in the management and operation of MCWD's water system, as well as to assess MCWD's financial condition and its possible need for a rate adjustment.

C. Overall Assessment

The District made significant improvements in many areas in 2005 and 2006. Both customer service and water quality have improved, water losses have been reduced and customer complaints have decreased. The only remaining recurring customer service problem appears to be delays in the installation of taps for new customers. Regulatory reports are now current. In general, recordkeeping practices and internal management, budgeting and financial controls have improved as well.

The largest and most daunting problems remaining relate to continuing to reduce water loss, which still exceeds fifty (50) percent and the lack of the financial wherewithal to fund the investments needed to fix the water loss problem and make other needed expenditures. The delayed Rural Development (RD) project related rate increase will provide significant additional revenues when implemented but will not generate sufficient revenues to fix these problems; neither will additional cash received from increased collections of delinquent accounts receivable and reductions in theft of service.

D. Summary of Findings

Specific audit findings by process examined are as follows:

Water Provisioning Process

1. MCWD's water provisioning process delivers adequate quality water to its customers, with the exception of total organic compounds (TOC) which are turned into trihalomethanes (THM) and haloacetic acids (HAA) by chlorine treatment.
2. The system generally delivers a reliable supply of water to its customers. However, the current design of the system is vulnerable to supply interruptions.
3. MCWD makes good use of technical services available to assist it.
4. MCWD has significantly reduced water losses, but the system still incurs excessive water losses.
5. There is a large backlog of distribution work.
6. MCWD does not have a damage prevention program.
7. There is no watershed management program.
8. There is no organized preventive maintenance program.
9. Adequate resources – labor, materials and equipment – are not available for the water provisioning process.

Capital Process

1. MCWD has successfully addressed several of the KPSC concerns with its water provisioning process through its recent capital program.
2. MCWD customer demand forecasting, system planning, capital project identification and prioritization, capital budgeting, capital program development and funding management resources are not adequate.
3. Capital projects are not identified and prioritized properly.
4. The past and current capital program has focused on system expansion over water loss reduction.
5. Current capital funding does not adequately support needed capital programs.

Customer Service and Revenue Process

1. Customer service is effective except that customers' requests for service taps are not completed promptly.
2. Controls are generally adequate to ensure the accuracy of customers' bills except that procedures to monitor for high usage may not be in compliance with the District's tariff.
3. Appropriate procedures and checklists exist and are used for customer service activities.
4. Procedures to identify theft of service are incomplete.

5. Procedures to collect past due accounts are inadequate.
6. Meter reading controls are inadequate.
7. Meter reading costs are slightly below the industry average, and can be further reduced.
8. The meter reading-to-billing cycle does not maximize cash flow to the District.
9. Mis-read meters and un-read meters do not appear to have contributed noticeably to the lost water problem.
10. While likely to provide some benefits, it is unlikely that the automated meter reading (AMR) pilot project is cost beneficial if the expenditure utilized borrowed or revenue-generated funds.
11. Bad debt records do not exist, so trends in delinquencies are unknown. As a result, it is impossible to determine whether delinquent accounts receivable are increasing, decreasing or staying the same
12. Meter test records indicate that metering inaccuracies are not a significant contributor to lost water.
13. Customer payments could be processed more quickly, thereby making cash available sooner for bill payment and other District needs.

Administrative and General Processes

1. Current rates are significantly below those of surrounding water districts.
2. Even with the RD rate increase, rates will not be sufficient to fully fund all needed activities.
3. The roles and responsibilities of the General Manager and the Board of Commissioners are not clearly defined and the organization is not appropriately structured as the District evolves from its crisis mode of operations.
4. The members of the Board of Commissioners are not properly compensated for services provided.
5. The District has current written policies and procedures.
6. Financial audits have not been completed for years subsequent to fiscal 2001.
7. The District has now filed all required regulatory reports.
8. The District's Fiscal Policies are generally reasonable for a utility of its size.
9. While the District has taken advantage of some State sponsored training for management staff and members of the Board of Commissioners in the past, it has not taken full advantage of the training offered by the State and the Kentucky Rural Water Association.
10. Information technology (hardware and software) is sufficient to meet the basic needs of District employees.

E. Summary of Recommendations

BWG identified twenty-five (25) recommendations as summarized in **Exhibit I-5**. Each recommendation is assigned a priority from A through C, with an A being the highest priority.

Exhibit I-5 Summary of Recommendations

Recommendation	Priority
Water Provisioning	
1. Through a combination of revenue increases and cost reductions, increase water provisioning process resources.	A
2. Develop a comprehensive water loss reduction program.	A
3. Implement a preventive maintenance program including upgrading the leak detection and repair program.	B
4. Implement a damage prevention program.	C
5. Establish a watershed pollution control program.	C
6. Develop and implement a long-term plan to reduce the system's vulnerability to supply disruptions.	C
Capital Process	
1. Establish an in-house capital program planning and management function staffed by one engineer. Alternatively, this capital program planning and management function could be provided by a regional resource.	B
2. As practical, prioritize water loss reduction programs over system expansion programs until water losses are reduced to 15 percent or less.	A
Customer Service and Revenue	
1. Improve procedures to identify theft of service.	B
2. Establish procedures and take action necessary to assure compliance with MCWD Tariff Sheet No. 19.	B
3. Improve collections of past due accounts.	A
4. Improve meter reading controls.	C
5. Provide meter readers additional tools to complete their routes timely and safely.	C

Recommendation	Priority
6. Consider implementing cycle billing to shorten the meter reading-to-billing cycle and improve cash flows to the District.	C
7. Consider implementing bi-monthly meter reading for residential customers while continuing to bill customers monthly.	C
8. As services are replaced, those meters located in difficult to read locations should be moved to locations that are less difficult to reach and placed in a consistent manner relative to the main and customer's premises.	C
9. Complete a cost-benefit study of AMR prior to making further investments in AMR technology.	C
10. Process customer payments on the day received so the payments are posted to the District's account on the day received.	B
Administrative and General	
1. The District should file a rate case with the Kentucky Public Service Commission.	A
2. Clearly define the roles of the Commissioners and General Manager. The definitions should be explicit as to the scope and limits of authority, the types of decisions that can be made, and areas of responsibility.	A
3. As soon as funding is available, begin to pay the members of the Board of Commissioners salaries based on guidelines provided by Kentucky Administrative Regulations.	C
4. As soon as funding is available, arrange for an external audit of the District's financial statements and then continue these audits on a timely basis going forward.	A
5. As soon as funding becomes available, establish a position of bookkeeper / accountant with responsibility for accounting and other transactional accounting processes.	C
6. The District should encourage its management staff and the members of the Board of Commissioners to take better advantage of State sponsored training opportunities	B
7. Consider increased regionalization to achieve economies of scale and reduce vulnerabilities to supply and personnel interruptions.	A

CHAPTER II
WATER PROVISIONING PROCESS

A. Introduction

The Water Provisioning Process task area includes the following topics from the request for proposals:

- Identify specific management and administrative areas with potential for improvement and develop an action plan to address those areas more extensively.
- Identify the root cause(s) for Martin County Water District's (MCWD's) significant water loss and assist MCWD in the development of near-term and long-term water loss reduction and control programs.
- In addition to water loss, identify MCWD's specific operational and infrastructure situation in order to identify immediate needs or deficiencies and develop a work plan to address those areas.
 - Distribution water system operations and maintenance
 - Water treatment system operations and maintenance

The tasks and subtasks for each area included:

- Interviews
- Data requests and analysis
- Informal discussions with Board, District and KPSC representatives
- Deliverables
 - Draft task report
 - Three party meeting to discuss the draft task reports
 - Final task report
 - Action plans

The scope of the water provisioning process task area included the operations and maintenance activities for:

- River intake
- Reservoir and watershed
- Purchased water
- Treatment
- Transmission
- Pumping

- Storage tanks
- Distribution up to the meter

The audit objectives and evaluative criteria for the water provisioning process task area are:

- Is the system adequately reliable?
- Is the damage prevention program sound?
- Does the system deliver adequate quality water?
- Is the metering of produced and distributed water adequate?
- Are water loss calculations accurate?
- Are water losses due to leaks reasonable?
- Are adequate resources – labor, materials and equipment – available?
- Are costs reasonable?

B. Background

Raw water is taken from the Tug Fork of the Big Sandy River (Tug Fork) and is pumped approximately five miles up to the Crum Reservoir. The raw water intake is at 580 feet elevation and its pumping capacity is rated at 1400 gallons per minute (GPM). There is a single transmission line from the raw water intake to the Crum Reservoir. The Crum Reservoir water elevation ranges from 750 feet when full to 671 feet when empty. The raw water pumped into the Crum Reservoir is supplemented by precipitation falling within the Crum Reservoir watershed. The Crum Reservoir is an open impoundment reservoir behind a man made dam. It has a maximum cumulative storage capacity of 512 million gallons. The Crum Reservoir watershed contains approximately 10 homes and two roads.⁴

The following table shows water supply statistics for October 2006.

**Exhibit II-1
Water Supply for October 2006**

Factor	Value
Water Pumped from the Tug Fork into the Crum Reservoir	32.679 million gallons
Rainfall	5.34 inches
Water into the Treatment Plant from the Crum Reservoir	50.225 million gallons
Percentage of Raw Water from the Tug River Assuming the Crum Reservoir Level Stayed the Same	65 percent

Sources: October 2006 Reports: Monthly Operation Report to the Kentucky Division of Water and Monitoring Results Submittal Forms to the Kentucky Department of Environmental Protection for the Tug River and Crum Reservoir

⁴ The background information was collected through interviews with and documents provided by the General Manager and O'Brien & Gere, the District's engineering consultant.

There has been no ongoing measurement of the distribution of raw water supplies between the Tug Fork and the reservoir watershed. Approximately 65 percent of the water transmitted from the Crum Reservoir to the Water Treatment Plant was from the Tug Fork and 35 percent was collected in the watershed in October 2006, assuming the level of the Crum reservoir remained unchanged.

Recent annual rainfall amounts, as measured at the Treatment Plant, are shown in the following table.

**Exhibit II-2
Rainfall Trend**

Year	Rainfall in Inches
2003	48.8
2004	49.8
2005	41.6
2006	46.9

Source: Rainfall measurements taken at the Water Treatment Plant by the plant operators.

There is a gravity feed system from Crum Reservoir to the Water Treatment Plant, which is at 620 feet, utilizing two transmission lines. Raw water from the Crum Reservoir is treated in the Water Treatment Plant using two up-flow clarifiers. Plant capacity is rated at 2 million gallons per day. Chemicals are added to settled and filtered water to meet water quality guidelines and the finished water is pumped up to the 300,000 gallon Clearwell Tank by two high lift pumps rated at 1400 GPM each through a single transmission line. The Clearwell Tank feeds the entire MCWD system, typically through transmission lines and supplemental pumping to subsidiary distribution tanks. MCWD has 15 subsidiary distribution tanks as follows:

**Exhibit II-3
MCWD Subsidiary Distribution Tanks**

Number	Tank	Size	Overflow Elevation
T1A	Buck Creek	150	991
T2A	Little Rock Castle	150	1080
T3A	292 South	100	1113
T4A	Big Elk	100	1080
T5A	Wolf Creek	100	819
T7B	Coldwater	150	853
T8B	Turkey	50	983
T9B	Inez (1)	500	860

Number	Tank	Size	Overflow Elevation
T10B	Inez (2)	150	860
T11B	KY 40 W	200	1171
T12B	Calloway	100	1164
T13B	Middle Fork	260	942
T14B	Buffalo Horn	50	950
T15B	Big Sandy Airport	1040	1360
T16B	KY645	60	985

Source: MCWD Water System Map by O'Brien & Gere

To the extent practical, the distribution system is designed to use gravity feed from the subsidiary distribution tanks to the customers. However, many distribution mains require in-line pumping to reach some customers on the main. MCWD, like similar Kentucky water utilities, is required to provide a minimum of 30 pounds per square inch (PSI) pressure to each customer at the meter.

MCWD has twelve pumping stations, as follow:

**Exhibit III-4
MCWD Pumping Stations**

Number	Name	GPM	Elevation
P1A	KY 40 B	670	660
P2A	Big Elk	240	720
P3A	Bone Hollow	40	690
P4A	KY 292 South	130	680
P5B	Turkey	90	620
P6B	KY 40 W	420	680
P7B	Calloway	90	650
P8B	Middle Fork	245	650
P9B	KY 645	90	680
P10B	Peter Cave	130	700
P11B	Buffalo Horn	60	800
P12B	Davella Road	350	700

Source: MCWD Water System Map by O'Brien & Gere

MCWD originally developed as two distinct distribution systems that were later merged. Common terminology is to refer to the Warfield, Kentucky side as the "A" system and the Inez, Kentucky side as the "B" system. All water is treated on the B system and the A

system is served by pumping treated water over a hill to the A side. The P1A pump station located at KY 40 B pumps water treated at the Water Treatment Plant to the A system.

MCWD has recently installed and initiated operation of a new telemetry system. The system monitors storage tank levels and allows remote operation of the pumps that feed them. Water Treatment Plant operators can refill tanks as needed without risk of overflowing them. The use of the telemetry system has virtually eliminated the previous problem of inadvertently overflowing tanks by leaving the pumps on too long.

The Crum Reservoir level is not telemetered or metered in any other way. Visual observations of the Crum Reservoir level are relayed to the Water Treatment Plant operators daily.

MCWD has approximately 174 miles of transmission and distribution mains ranging in size from 2 to 16 inches. The distribution mains serve approximately 3,500 customers. Typically, each customer is served from the main by a service line to a meter at the property line. MCWD estimates that it serves approximately 95 percent of the Martin County population. The remainder of the county's citizens is served by wells or other means.

MCWD is interconnected to three other systems:

- City of Kermit, West Virginia (interconnected to the A system in the far southeast end)
- City of Prestonsburg, Kentucky (interconnected to the B system in the far southwest end)
- Mountain Water District (interconnected to the A side in the far southern end)

MCWD is able to purchase water from or sell water to these interconnected systems. There are no formal agreements regarding sales and purchases and the systems operate on a "good neighbor" basis in cases of emergency. For example, at the time of this writing, the Mountain Water District was serving approximately ninety MCWD customers from its interconnection because the MCWD main to the customers was broken.

MCWD has an agreement with Prestonsburg to jointly serve the prison near the Big Sandy Airport. Both MCWD and Prestonsburg supply water to the distribution tank and Prestonsburg distributes it to the prison and bills the customer. MCWD supplies about 25 million gallons per year to the prison.

Water purchases from the interconnected systems in recent years were as follows:

**Exhibit II-5
Water Purchases (Gallons)**

Interconnection	2005	2006
Kermit	2,087,000	2,036,000
Prestonsburg	0	0
Mountain Water	2,701,000	3,985,000

Source: MCWD Lost Water Reports

No sales from MCWD to the other systems were noted.

C. Findings and Conclusions

1. MCWD's water provisioning process delivers adequate quality water to its customers, with the exception of total organic compounds (TOC's), which are turned into trihalomethanes (THM's) and haloacetic acids (HAA's) by chlorine treatment.⁵

- MCWD is currently in compliance with all water testing and reporting regulations. These testing requirements include:
 - Raw water once per day
 - Treatment Plant influent every four hours
 - Combined filter effluent every four hours
 - Plant tap effluent every four hours
 - Distribution system – four samples per day
- MCWD is now on good terms with the Kentucky Department of Water Drinking Water Branch. Prior deficiencies have been corrected.
- The Kentucky Department of Health reports no known public health issues related to water quality.
- The Water Quality Reports filed by MCWD note only one chronic problem. The raw surface water used by MCWD naturally contains high levels of TOC's from vegetation and other sources flowing into the water supply. Adequate removal of TOC's is necessary to prevent the formation of THM's and HAA's when the TOC's react with chlorine. MCWD received two monthly violations for failing to meet the treatment requirements for TOC's in 2005. Similar results occurred in prior years. MCWD detects levels exceeding the maximum contaminant levels for THM's and HAA's from time to time. Some people who drink water containing THM's or HAA's in excess of the maximum contaminant levels over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.
- The TOC/THM/HAA problem is exacerbated by MCWD's current system of pre-chlorinating the raw water prior to treatment. This allows early formation of THM's and HAA's. The District plans to switch to post-chlorination, after more TOC's have been removed. This process change is expected to solve this problem.

2. The system generally delivers a reliable supply of water to its customers. However, the current design of the system is vulnerable to supply interruptions.⁶

⁵ Interviews with Treatment Plant operators, Kentucky Department of Health and Kentucky Department of Water Drinking Water Branch; and annual Water Quality Reports to customers.

⁶ Interviews with MCWD personnel, O'Brien & Gere representatives, and state regulatory personnel.

- MCWD routinely provides reliable delivery of all the water customers require. Other than for intermittent main breaks that are repaired on an emergency basis⁷, only two notable supply disruptions have been experienced in recent years. The drought of 1998 caused the Tug Fork to run low and the mine containment sludge spill in 2000 caused the Tug Fork to be contaminated.
- In the future, the Tug Fork could again run low or be contaminated
- There is a single transmission line to the Crum Reservoir from the Tug Fork intake that could be compromised.
- Reserve capacities within the system are limited should the river source be diminished:
 - Crum Reservoir’s nominal storage capacity is 60 million gallons, a one to two month supply.
 - The Crum Reservoir was constructed in the 1960’s and the dam leaks. The reservoir has never been dredged and accumulating sediment reduces its capacity and introduces risk of contamination.
 - MCWD cannot bypass the Crum Reservoir if the reservoir is contaminated or requires maintenance. The raw water supply feeds into and out of the Crum Reservoir, there is no pipe bypass.
 - Maximum Water Treatment Plant capacity is two million gallons per day, the maximum recorded production amount. Maximum day water pumped in 2004 was 1.99 million gallons, 2005, 1.948, and 2006, 1.849.
 - Clarifier maintenance and repairs could reduce the plant capacity by half for a period of a month or more.
 - The Clearwell tank, which feeds the entire system, is only 300,000 gallons, only a few hours supply at peak consumption.
 - Subsidiary storage tanks are only designed to provide 24 hours supply for their distribution area if full when supplies are interrupted.
 - There are few looped mains because of topography, causing vulnerability to transmission and distribution main breaks that cannot be repaired quickly.
 - Interconnected systems can provide only limited relief because of their limited capacities, reliance on similar raw water supplies and limited water pressure at the interconnection points.
- There are two projects planned but not yet funded to address some of these vulnerabilities, including:

⁷ The January 4, 2006 Kentucky Rural Water Association Peer Review Report noted that in the spring flooding of 2005, MCWD was able to repair five creek crossing washouts in a single day, a “job well done.”

- Adding a third clarifier and making other improvements to the Treatment Plant. This will increase treatment capacity by fifty percent and resolve the THM/HAA problem mentioned above.
- The current 300,000 gallon Clearwell tank is to be replaced by two 500,000 tanks, more than tripling the Clearwell capacity.

3. **MCWD makes good use of technical services available to assist it.**⁸

- MCWD has developed a good rapport with the Kentucky Department of Water (DOW) Drinking Water Branch. MCWD regularly receives and follows technical advice from Drinking Water Branch experts. DOW technical services are provided without charge.
- MCWD extensively utilizes the assistance of the Big Sandy Area Development District (Big Sandy) in identifying, securing and administering grants and loans. The Authority also promotes economic development in the county. Funding and economic development is provided without charge and grant administration is provided by a fee taken from the grant.
- MCWD regularly seeks the assistance of the Kentucky Rural Water Association. For example, the Association conducted a Peer Review of MCWD in 2005 and issued its report in January 2006. MCWD pays membership dues to the Association, but specific assistance activities, such as the peer review, are provided without additional charge.
- MCWD routinely receives technical assistance and advice from its principal engineering firm, O'Brien & Gere (OB&G). OB&G provides advice and counsel on many technical topics to the District. OB&G only receives payments for specific engineering and construction management projects once the project has been bid. The frequent advice and assistance is provided without charge.

4. **MCWD has significantly reduced water losses, but the system still incurs excessive water losses.**⁹

- The following table shows water production, purchase and sale trends as reported to the PSC.

⁸ Interviews with MCWD personnel, DOW personnel, Big Sandy representatives, Kentucky Rural Water Association personnel, and OB&G representatives.

⁹ Interviews with MCWD personnel, O'Brien & Gere representatives and Kentucky Rural Water Association personnel.

**Exhibit II-6
Water Pumped and Sold
(Million Gallons)**

	2006	2005	2004	2003
Water Purchased	6.02	6.34	14.67	19.39
Water Pumped	595.31	635.82	654.92	651.60
Total Purchased and Pumped	601.33	642.17	669.59	670.99
Total Water Sold to Customers	271.05	224.02	N/A	N/A
Water Purchased or Pumped but not Sold	330.28	418.15	N/A	N/A
Percent not Sold	55	65	N/A	N/A
Maximum Gallons Pumped in One Day	1.849	1.948	1.99	N/A

Source: Annual reports to the PSC and BWG calculations

- MCWD has recently developed a more detailed water loss analysis. The results of this analysis for 2006 are shown in the following table.

**Exhibit II-7
MCWD 2006 Water Loss Analysis
(Million Gallons)**

	2006
Treated Water into Clearwells - Water Produced	595.3
Purchased Water:	
Kermit Water Purchases	2.0
Mountain Water Purchases	4.0
Net Purchased Water	6.0
Total Produced and Purchased Treated Water	601.3
Water Supply to End Users	
Plant Use	21.1
Fire Department Use (estimated)	2.7
Prison Tank Use	34.6
Books 9-18 A Side Customer Metered Use	87.6
Books 1-8 B Side Customer Metered Use	148.8
Total Treated Water Consumption	294.8
Total Treated Water Loss	306.5
Treated Water Percentage Loss	51.0%

	2006
Total Prison Tank and Customer Metered Use	271.0
Water Sold as a Percentage of Water Produced	45.1%
Average Gallons per Day Produced or Purchased	1.65
Average Gallons per Day Sold	.74

Source: MCWD Water Loss Analysis and BWG calculations

- Water purchased or produced but not sold fell from 65 percent in 2005 to 55 percent in 2006.
- From 2005 to 2006, MCWD purchased and produced less water, but sold more. This is largely due to reducing subsidiary distribution tank overruns, fixing main and service leaks and replacing meters (to get more accurate usage numbers).
- MCWD has reduced its water purchases 69 percent from 2003 to 2006.
- The metering of produced and distributed water is not comprehensive. There is only one transmission and distribution meter. It is at the pump station serving the A system. It has not been read and therefore has not been used for determining the A system water losses versus the B system water losses. More in-line “master” meters are planned, but have not yet been funded or installed. Additional transmission and distribution master meters will allow the pinpointing of water losses by distribution main. This will allow precise prioritization of leak reduction efforts.
- By long standing, but informal, practice, MCWD supplies water to the five volunteer fire department stations in the county at no charge. This is in addition to the customary practice of not charging for fire hydrant water used in fighting fires and training. At present, water used by the fire department stations is not metered.
- Water losses due to leaks and other causes are not reasonable. The PSC standard is to have water losses of less than 15 percent. Water professionals familiar with Eastern Kentucky (see footnote 9) are in agreement that MCWD could meet this standard. Now that the overflowing tank problem has been fixed, the remaining water losses are likely attributable to:
 - Main and service leaks, with the consensus that service leaks are the larger problem. Main leaks are easier to visually identify and typically cause water pressure problems for customers on the main, triggering an investigation. Services, however, can have relatively small leaks that are not readily identifiable because they are near creeks or streams and can still provide basic water pressure. Service line leaks are estimated (see footnote 9) to cause 50 to 90 percent of the water losses.
 - Customer metering problems and water theft is the other potential category of water losses. This category can include: slow meters, meters

that were never installed on service lines, unauthorized taps, and meter bypasses.

- In a PSC rate case, recovery of the costs of water losses in excess of 15 percent, excluding water used by the utility in its own operations, is not allowed according to PSC 807 KAR 5:066 Sec. 6(3). (See footnote 3 on page I-7).
- By achieving a 15 percent water loss target, 2006 water treated and purchased would have been 346.8 million gallons, rather than the actual amount of 601.3 million gallons, a reduction of 254.5 million gallons, or about 42 percent. A 42 percent reduction in water production would result in estimated direct savings of \$100,000 per year. These savings come from a reduced need for electricity for pumping and chemicals for treatment. Further indirect savings could be expected from fewer leak calls and repairs and less damage caused by leaks. An additional benefit would be that a larger proportion of the raw water would come from the Crum Reservoir watershed rather than the Tug Fork.

5. There is a large backlog of distribution work.¹⁰

- There were approximately 50 tap requests not yet completed as of November 14, 2006; tap fees had been collected for 13 of these tap requests .
- There were 246 work orders not yet completed for leak repairs, meter sets, meter rereads, meter pulls, low pressure, meter reads in, meter reads out, tap relocates, and similar distribution work.
- Main leaks are prioritized for repair over other work. However, failing to reduce the backlog of work orders has allowed service leaks to continue un-repaired for a period of time and revenue from new and delinquent customers to be delayed.

6. MCWD does not have a damage prevention program.¹¹

- MCWD does not participate in Kentucky's one call – call before you dig - program and has no excavator education program.
- MCWD does not normally mark its facilities in advance of excavation by others.
- MCWD experiences many third party damages from dig-ins to its facilities.¹²
- The District has little recourse to collect damages if the perpetrator used the one call system and the District did not mark its facilities in a timely manner as required by the one call system.
- When MCWD does have recourse against a party responsible for damage to its facilities, MCWD has generally chosen not to bill the perpetrators and sue to collect damages because of a lack of resources.

7. There is no watershed management program.¹³

¹⁰ MCWD Office Work Order Log as of November 14, 2006.

¹¹ Interviews with MCWD personnel.

¹² Anecdotal reports only. Statistics are not kept.

- All of MCWD’s water supply is from surface water. Surface water is highly vulnerable to contamination.
- As much as one-third of MCWD’s water comes from water collected in the Crum Reservoir watershed.
- The septic systems for the houses within the Crum Reservoir watershed are not tested for effectiveness.
- There is no mitigation of runoff from the roads in the Crum Reservoir watershed.
- Water in the Tug Fork is collected from a much larger watershed that includes several wastewater treatment plants.
- There are many reports of raw sewage flowing into the Tug Fork watershed as well as possible pollution from improperly disposed solid waste. There is no enforcement of septic tank regulations other than for new installations and solid waste disposal facilities are limited.
- There is no regional watershed management program that addresses pollution control in the Tug Fork watershed prior to the MCWD intake. A comprehensive regional watershed management program would have to include the West Virginia side of the Tug Fork watershed as well as the Kentucky side.

8. There is no organized preventive maintenance program.¹⁴

- MCWD operates on a largely “repair it when it breaks” mode.
- MCWD lacks organized equipment (e.g., tanks, pumps, valves, and filters) records and main and service records and recommended preventive maintenance routines.
- Most MCWD equipment and mains would benefit from an organized preventive maintenance program. A preventive maintenance program would result in fewer service interruptions and lower costs in the future.
- The Kentucky Rural Water Association Peer Review Report specifically recommended a Water Storage Tank Operation and Maintenance Program with the American Water Works Association recommended practices.

9. Adequate resources – labor, materials and equipment – are not available for the water provisioning process.¹⁵

- Water provisioning process costs are low. The total operating expenses for MCWD in 2006 were \$1,032,404. The following table shows expense trends for the District. Accounting classification changes and reduction in treated water are responsible for the differences in individual accounts from 2005 to 2006.

¹³ Interviews with MCWD personnel, Kentucky Department of Health personnel and Department of Water personnel.

¹⁴ Interviews with MCWD personnel.

¹⁵ Interviews with MCWD personnel.

**Exhibit II-8
MCWD Expense Trends**

Expense Account	2006	2005	2004	2003
Source of Supply & Pumping – Operation	\$74,968	\$170,763	\$125,523	\$109,583
Source of Supply & Pumping – Maintenance	13,376	7,666	59,109	121,394
Water Treatment – Operation	354,259	311,889	210,193	109,403
Water Treatment – Maintenance	909	5,587	57,767	110,060
Transmission & Distribution – Operation	179,285	181,178	178,055	116,989
Transmission & Distribution – Maintenance	179,666	163,936	170,269	184,625
Customer Accounts	96,434	98,489	120,020	120,437
Administrative & General	133,507	120,771	117,131	120,969
Total	1,032,404	1,060,279	1,038,067	993,460
Customers at Year End	3,506	3,411	3,434	3,376
Expenses per Customer	294	311	302	294

Source: Annual reports to the Commission and BWG calculations

- The largest expense categories in 2006 were:
 - Salaries, wages, pension and benefits for employees - \$534,426
 - Purchased power - \$179,697
 - Chemicals - \$51,187
 - These three categories accounted for 74 percent of the total operating expenses
- Unit costs for providing water in 2006 are shown in Exhibit II-9.

**Exhibit II-9
2006 Unit Operating Costs
(With No Administrative and General Overhead Costs Applied)**

Cost Area	Total Cost	Thousand Gallons Produced	Cost per Thousand Gallons Produced
Supply and Treatment	\$443,512	595,314	\$.745
		Thousand Gallons Produced and Purchased (Distributed)	Cost per Thousand Gallons Distributed
Transmission and Distribution	\$358,951	601,335	\$.597
	Total MCWD Operating Expense	Thousand Gallons of Water Sold	Cost per Thousand Gallons Sold

Cost Area	Total Cost	Thousand Gallons Produced	Cost per Thousand Gallons Produced
Total Cost for All Functions	\$1,032,404	271,046	\$3.81
			Cost per Thousand Gallons Distributed
			\$1.72

Sources: MCWD Annual Reports and BWG calculations

- Total inventory for plant materials and supplies at the end of 2006 was only \$17,529. A treatment and distribution operation the scale of MCWD requires a larger inventory of materials and supplies for efficient operations.
- There are only four full-time water treatment plant operators and two on-call part-time operators. A seven by 24 hour operation requires a minimum of five full-time operators to cover 21 shifts per week and have spare capacity for vacations, illness, training and other absences.
- There are only five distribution employees. The sixth distribution employee, the supervisor, recently became the fourth treatment plant operator and was not replaced in distribution. One of the distribution employees is largely occupied by sampling and other duties and is normally unavailable for main, service and meter work. Many jobs require a crew of four or more because of difficult traffic management conditions. With vacations and other absences, this often results in having a single crew doing one job at a time each day.
- The distribution crew does not have a trailer for its only backhoe and, even if there was a trailer, there is no vehicle capable of towing the backhoe and trailer. This results in highly inefficient and dangerous driving of the backhoe from job to job.
- The distribution crew does not have an assembly area or proper facilities for garaging equipment and storage of materials and supplies.

D. Recommendations

1. **Through a combination of revenue increases and cost reductions, increase water provisioning process resources.** (Reference Findings 5 and 9)
 - Increase rates above the RD Grant rate increase in process. (See Chapter V)
 - Consider selling unused property such as the old Tug Fork raw water intake site and the old Route 40 pump station site.
 - Prioritize water loss reductions (see below) to qualify for PSC rate increases and petition the PSC for interim relief from the water loss requirement if necessary.
 - Install paid tap requests in a timely manner. The District will begin collecting monthly payments sooner.

- Support bill collection turn-offs and theft investigations in a timely manner to increase bill collections.
- Reduce electricity, chemicals and leak repair costs by reducing water losses (see below).
- Further reduce electricity costs by:
 - Adding additional capacitor banks on pumps as economically justified.
 - Exploring the possibility of time of day off peak rates and do as much required pumping as possible in lower rate periods.
 - Considering natural gas powered pump replacements for electric pumps if the total cost is lower.
- Replace the distribution supervisor and add one four-person distribution crew to reduce the work backlog and implement the water loss reduction program, damage prevention program, watershed management program and preventive maintenance program recommended below.
- Add a fifth water treatment plant operator to reduce overtime and provide a resource for preventive maintenance and record keeping assistance.
- Add an additional back hoe or excavator and two trucks and trailers appropriate to haul the additional equipment.
- Add additional facilities, vehicles, equipment, materials, and supplies as necessary to make the distribution crews as efficient as possible. A service center with a garage for minor maintenance, warehouse, meeting/training rooms, computer access and offices would be ideal.

2. Develop a comprehensive water loss reduction program. (Reference Finding 4)

- Improve the metering of produced and distributed water to include in-line master meters from the Clearwell tank, all subsidiary distribution tanks and on all major distribution mains. Make immediate use of the existing A system meter for determining the relative water loss between the A and B systems.
- Use the information from additional metering of distributed water as compared to metered consumed water to identify water losses by main. Rank them from highest to lowest water loss. The Kentucky Rural Water Association Peer Review Report contains detailed recommendations for this process.
- Prioritize, based on volumes of water lost, the mains and services for replacement or repair.
- Prior to commencing repair and replacement work on each main, identify and resolve any water theft, metering or related problems.
- Replace or repair all excessively leaking mains and services over a three year period.

3. **Implement a preventive maintenance program including upgrading the leak detection and repair program.** (Reference Finding 8)
 - Establish records for each piece of equipment (such as pumps, injectors and valves) and pipe segment.
 - Track all maintenance performed on each piece of equipment and pipe segment.
 - Develop preventive maintenance routines for select facilities including routine flushing and valve maintenance. Implement manufacturers' recommended maintenance and AWWA guidelines as available.
 - Establish an ongoing leak detection and repair program following the completion of the water loss reduction program (see above).
4. **Implement a damage prevention program.** (Reference Finding 6)
 - Join and actively participate in Kentucky's Call Before You Dig (one call) program.
 - Mark involved facilities in a timely manner as one call notices are received.
 - Develop and implement a damage prevention education program for State and County road crews and local civil contractors.
 - Bill perpetrators who damage marked District facilities.
 - Sue perpetrators who do not pay billed damages.
5. **Establish a watershed pollution control program.** (Reference Finding 7)
 - Implement a Crum Reservoir pollution control program including annual septic tank system dye tests by the Health Department and mitigation of roadway runoff.
 - Regularly test creeks flowing into the reservoir and trace problems found back to the source.
 - Work cooperatively with other water districts to establish an upstream regional watershed management program for the Tug Fork including septic tank monitoring, solid waste disposal programs and tributary testing and remediation.
6. **Develop and implement a long-term plan to reduce the system's vulnerability to supply disruptions.** (Reference Finding 2) Alternatives to be considered include:
 - Expand the Crum Reservoir capacity by raising and repairing the dam and/or dredging the reservoir.
 - Install a Crum Reservoir bypass (pipe and valves).
 - Expand the Treatment Plant capacity (in process).
 - Install a second line to the Clearwell tank.
 - Expand the Clearwell tank capacity (in-process).
 - Expand looping and valving of the transmission and distribution system.

- Expand distribution tank capacities or add additional distribution tanks.
- Expand the telemetry system to cover the Crum Reservoir, master meters and pressure control valves to provide early detection and resolution of problems.

CHAPTER III
CAPITAL PROCESS

A. Introduction

The capital process task area includes the following topics specified in the request for proposals.

- Identify specific management and administrative areas with potential for improvement and develop an action plan to address those areas more extensively.
- Identify the root cause(s) for MCWD's significant water loss and assist MCWD in the development of near-term and long-term water loss reduction and control programs.
- In addition to water loss, identify MCWD's specific operational and infrastructure situation in order to identify immediate needs or deficiencies and develop a work plan to address those areas.
 - Priority listing of necessary infrastructure improvements
 - Water system planning, engineering and construction

The tasks and subtasks for this task area were:

- Interviews
- Data requests and analysis
- Informal discussions with Board, District and PSC representatives
- Deliverables
 - Draft task report
 - Three party meeting to discuss the draft task reports
 - Final task report
 - Action plans

The scope of the capital process task area includes:

- Customer demand forecasting
- System planning
- Capital program planning, prioritization and budgeting
- Financing
- Implementation / Construction

The audit objectives and evaluative criteria for the capital process task area are:

- Are customer demand forecasting and system planning adequate?

- Are capital projects identified and prioritized properly?
- Is there adequate financing for all capital program needs?

B. Background

MCWD has an extensive capital program. The table below summarizes the current and recently completed major projects.

Exhibit III-1 MCWD Capital Projects, Major Repairs and Improvements Completed in the Last Five Years

Completed Projects
• Replacement of Control Valves and Pressure Reducing Valves in the Distribution System
• Completion of Raw Water Intake and Transmission Main from the Tug Fork to Crum Reservoir
• Restoration and Maintenance of the Raw Water Intake Station
• County Wide Telemetry System Providing Automated Control of Pumping Stations and Monitoring of all Storage Tanks
• Rehabilitation of Peter Cave Branch Booster Pumping Station
• Replacement of Feed Line to Twin Water Storage Tanks
• Cleaning, Sterilization and Return to Service of Twin Water Storage Tanks
• Design of Replacement of Four Inch Water Main to Pike County Line (Flood Damage)
• Contract 12 - Water Main Extension Serving 230 Customers
• Eden School Tank
• KY 645 Water Main Extension, Booster Pump Station and Water Storage Tank
• Contract 14 - KY 40 Buck Creek Hill KDOH Water Main Relocation
• Water Meter Replacement Program (Over 1,000 Residential Meters Replaced to Date)
• County Wide Fire Hydrant Evaluation, Flow Testing and Certification
• Contract 16 - Water Main Extension to New KDOH Maintenance Garage on KY 645
• Contract 17 - Water Main Extension to Correct Low Pressure at Eden Subdivision
• Evaluation and Inspection of Twin Tanks, Buck Creek Hill and Clearwell Tank
• Upgrade of Otto Brown Booster Pumping Station to Correct a Flow Problem
• Installation of New Booster Pumping Station at Meathouse Branch to Correct Low Pressure and Flow Problem
• Security Vulnerability and Assessment and Emergency Response Plan Completed and Submitted to EPA

• Replacement of Drive Unit in Clarifier Number 2 in the Water Treatment Plant
• Various Minor Plant Improvements Required by the PSC Order
• Resolution of Numerous Low Pressure and Low Flow Customer Complaints
In Process
• KY 40 Warfield Road KDOH Water Main Relocation
• Upper Alpha Branch Water Main Replacement to Correct Low Pressure and Flow Problem
• Johnson Bottom Water Main Replacement to Correct Low Pressure and Flow Problem
• Water Treatment Plant Expansion and Improvements Phase I (Increases Capacity to 2.95 MGC per Day)
• Water Treatment Plant Expansion and Improvements Phase II (Renovate Building and Eq, Add Offices and Conf Area)
• RD Phase I - Clearwell Tank Replacement - Single 300,000 Gallon Tank to Two 500,000 Tanks
• Wolfe Creek Water Main and Services Replacement (To Reduce Water Loss)
• Master Meter Installation - 12 Distribution Master Meters
• RD Phase II - Upgrade and Replacement of Buck Creek Hill and Stepp Water Storage Tanks
• KDOH Water Main Relocation at KY 3 and KY 645 (Will Correct Saltwell Branch Low Pressure Problem)
• Residential and Commercial Radio Read Meter Trial
• New Automated Billing System and Hardware

Source: MCWD Management Audit Kickoff Meeting Presentation confirmed by a letter from OBG

Summary details (start and completion dates, change orders, funding sources and contractors) on these projects were unavailable.

Most of the MCWD capital projects are funded by grants. A small amount of capital expenditures is funded by debt. MCWD capitalizes all capital expenditures regardless of funding source and depreciates the assets. The following table shows the additions to gross plant and donated capital (grants and contributions in aid of construction) in recent years.

Exhibit III-2
MCWD Additions to Gross Utility Plant and Donated Capital
(in thousands)

Fiscal Year	2006	2005	2004	2003	2002	2001	2000
Utility Plant	\$21,809	\$20,634	\$19,150	\$18,415	\$18,240	\$17,987	\$17,040
Plant Additions	1,175	1,484	735	175	253	947	NA
Donated Capital (Contributions in Aid of Construction in 2001 and 2002)	17,294	16,721	14,966	14,198	13,997	13,880	12,651

Fiscal Year	2006	2005	2004	2003	2002	2001	2000
Donated Capital Additions	573	1,755	768	201	117	1,229	NA

Source: MCWD Annual Reports to the PSC and BWG calculations

Utility plant additions totaled \$4.8 million for the last six years. Donated capital / contributions in aid of construction totaled \$4.6 million for the last six years. As of the end of 2006, MCWD had just \$2.5 million in long-term debt on net plant of \$14.8 million (\$21.8 million gross plant less \$7.0 million accumulated depreciation and amortization). Depreciation and amortization is not net of amortization of contributions-in-aid-of-construction.

The MCWD 2006 Budget lists state grant proceeds of \$768 thousand in 2004 and \$700 thousand and \$850 thousand budgeted for 2005 and 2006, respectively.

C. Findings and Conclusions

1. MCWD has successfully addressed several of the PSC concerns with its water provisioning process through its recent capital program.¹⁶

- The following table correlates the recent PSC concerns with recent capital projects:

Exhibit III-3 MCWD Projects that Address PSC Concerns

PSC Concern	Relevant Capital Projects
High Unaccounted for Water	Replacement of Control Valves and Pressure Reducing Valves in the Distribution System, Telemetry System to Eliminate Tank Overflows, and Numerous Main Replacement and Repair Projects
Lack of Meter Testing	Water Meter Replacement Program and Testing of Replaced Meters
Low Fire Hydrant Flow Rates	County-wide Fire Hydrant Evaluation, Flow Testing, and Certification
Customers With Less than 30 PSI at the Meter	Multiple booster station, main replacements and extensions, and tank upgrades and rehabilitations
Functioning Telemetry System	Completion of the County Wide Telemetry System Installation and Implementation
Mapping and Inventory of Assets	Maps and records provided with each project completion

Source: BWG analysis of completed projects

- While unaccounted water remains too high, it has been reduced by these efforts. See Chapter II, Water Provisioning Process, for more information on water loss reductions.
- Over one thousand meters have been replaced and the meter replacement program is continuing.

¹⁶ Interviews with MCWD.

- The backlog of customer complaints of low pressure at the meter has been eliminated and new complaints are addressed in a more timely fashion.
- The telemetry system has been installed and is used as intended on a daily basis, virtually eliminating storage tank overflows.

2. MCWD customer demand forecasting, system planning, capital project identification and prioritization, capital budgeting, capital program development and funding management resources are not adequate.¹⁷

- MCWD is an organization with a small number of employees. The organization consists of a general manager, treatment section, distribution section and office section. Each section has only a handful of employees.
- MCWD has no in-house planning, engineering, modeling nor mapping capability. None of the employees are engineers and the utility does not possess engineering, modeling or mapping tools of any type. Paper drawings and maps are provided to MCWD by the outside engineer for completed projects. Virtually no capital project engineering work is done by MCWD employees.
- MCWD relies on its engineering consulting engineering firm, O'Brien & Gere (OB&G) for planning, engineering, modeling, mapping and funding development assistance. OB&G maintains a strong relationship with the District and is highly responsive for requests for assistance. It has served the District well for many years. However, MCWD has no expense budget to engage capital program planning services. OB&G provides capital program planning services as part of a business development effort hoping to create funded capital projects for which it can be paid for engineering and construction management services. While there is no evidence of bias in its advice, the current arrangement would provide an incentive to any engineering firm to promote large projects with substantial construction budgets over small projects with limited engineering requirements.
- OB&G has developed both geographical information system (GIS) maps and a hydraulic pressure model of the MCWD system. The firm provides engineering advice and assistance using these tools freely to MCWD. However, MCWD does not own and cannot operate the GIS mapping system and hydraulic model. MCWD does not have paper maps of its entire system. OB&G is willing to share and further develop these resources, but would have to be compensated beyond incidental use.
- MCWD relies primarily on the Big Sandy Area Development Authority (Big Sandy) and OB&G to identify and secure external financing for its capital projects.
- MCWD does not have an employee available to coordinate and manage the capital program, including:
 - Customer demand forecasting
 - System planning

¹⁷ Interviews with MCWD personnel, Big Sandy and OB&G representatives.

- Capital project identification and prioritization
- Capital budgeting
- Capital funding development including grant and loan applications
- Capital project implementation

3. Capital projects are not identified and prioritized properly.¹⁸

- The last capital program planning effort was the Capital Improvement Plan developed by OB&G in June 2003. This plan included recommendations and cost estimates for capital improvements in the water treatment plant, Crum Reservoir, telemetry system, meter replacements, storage tank renovations, and water main replacements. Several of the projects have been completed and others are in process. However, the plan has not been updated since it was first written.
- There is no formal capital budget.
- There is no formal capital program planning process.
- There is no customer demand forecast or long-term system plan.
- Capital projects are suggested by many sources, including:
 - MCWD employees
 - MCWD Board Members
 - MCWD customers
 - Kentucky DOW professionals
 - OB&G professionals
 - Big Sandy professionals
- The availability of funding strongly impacts the capital projects selected for implementation. Certain funds can only be used for certain types of projects. When those funds are available, the applicable projects are implemented.
- The Board members informally evaluate all potential capital projects and select the ones to be implemented based upon funding availability and their collective judgment.

4. The past and current capital program has focused on system expansion over water loss reduction.¹⁹

- As noted in Chapter II, Water Provisioning Process, unaccounted for water losses are, and have chronically been, exceptionally high. This results in higher than necessary O&M costs for pumping, treatment chemicals and operations, and leak repairs.

¹⁸ Interviews with MCWD personnel and OB&G representatives.

¹⁹ Interviews with MCWD personnel.

- Prior Boards exhibited a bias towards capacity expansions over water loss reduction projects.
- Many of the past and planned capital projects are for system capacity expansion rather than for water loss reduction, for example:
 - Contract 12 Water Main Expansion
 - Contract 16 Water Main Expansion
 - Contract 17 water Main Expansion
 - Water Treatment Plant Expansion (planned)
 - Clearwell Tank Replacement and Expansion (Planned)
- While MCWD has a clear mission to serve all County citizens, its prioritization of projects has been out of balance. It has continued to expand capacity before the major water loss problems have been solved.

5. Current capital funding does not adequately support needed capital programs.²⁰

- Current rates do not support any revenue funding of capital or additional debt for capital projects. MCWD relies on external grants or combinations of grants and loans.
- MCWD has multiple sources for capital funds:
 - Kentucky Infrastructure for Economic Development (IED) grants (severance tax funded); for example, Water Treatment Plant Grant WX21159002 for \$3.1 million, of which \$1.4 million has been spent or obligated and \$1.7 million remains.
 - 502C3 Community Development grants (HUD money administered by the State through the County to MCWD)
 - US Department of Commerce Economic Development Administration grants through the County for the creation of jobs
 - Appalachian Regional Commission grants through the County for infrastructure
 - USDA Rural Development (RD) combination grants and loans (two prior and one current application in progress). RD loans have a 40 year term
 - Kentucky Association of County Organization (KACO)
 - Kentucky Department of Water State Revolving Fund (SRF) loans for drinking water improvements to quality and pressure. SRF has a one percent interest rate and a twenty year term
 - Appalachian Regional Commission matching grants to make up shortfalls in other funding sources

²⁰ Interviews with MCWD personnel, OB&G representatives, and Big Sandy professionals.

- PRIDE funds for watershed pollution control
- Kentucky Department of Water KIA Fund B low cost loans (less than one percent)
- The Board has broad discretion in how Kentucky IED grants are spent. However, each project must have Big Sandy and Fiscal Court approval and money cannot be spent on employees, only contractors and materials. Federal grants are more specific to individual projects.
- MCWD has not gotten HUD block grants, Economic Development grants or Appalachian Regional Commission grants recently. It may be eligible to receive these types of grants through County applications.
- OB&G partners with MCWD and Big Sandy to secure grants and loans. It is not compensated for this assistance. It can only recoup its investment through engineering and construction management fees on financed projects. Further, OG&G must compete for the engineering and construction management awards which it may not win.
- Big Sandy normally administers MCWD grant and loan capital projects. Big Sandy receives an administration fee for its work out of the grant funds except for the RD projects. OB&G may administer the RD projects if Big Sandy cannot.
- There is no external requirement to have a capital plan. Projects are submitted individually to multiple funding sources. Big Sandy maintains a list of potential capital projects identified by MCWD, but it is not based on a plan.
- With additional effort, MCWD would likely be able to secure additional external funding for its capital projects. A well conceived capital program plan would aid in attracting additional funding.

D. Recommendations

1. **Establish an in-house capital program planning and management function staffed by one engineer. Alternatively, this capital program planning and management function could be provided by a regional resource.** (Reference Findings 2, 3, 4, and 5). This function would:
 - Develop and implement simple customer demand forecasting, system planning, capital program planning and budgeting processes
 - Increase efforts to attract infrastructure grants and loans to fulfill the capital program as planned
 - Oversee capital project engineering and construction
 - Bring the GIS maps and pressure model in-house. Further development of the GIS mapping may be enhanced by cooperating with the County's enhanced 911 mapping initiative.
 - Advise on the preventive maintenance program (see Chapter II)

2. **As practical, prioritize water loss reduction programs over system expansion programs until water losses are reduced to 15 percent or less.** (Reference Findings 3 and 4)

- The 2007 IED grant money should be applied first to installing in-line master meters and pinpointing water losses by main.
- After the water losses have been pinpointed, consider a service line leak repair / replacement program rather than a combined main and service line replacement program where practical. Service line repair/replacements are estimated to cost \$400-500 each.²¹ Repairing or replacing all 3,500 service lines (which is not necessary) would likely cost less than \$1.5 million. However, in some cases, it is impractical to fix the service line without repairing or replacing the main.

²¹ Based on information provided by the Kentucky Rural Water Association.

CHAPTER IV

CUSTOMER SERVICE AND REVENUE PROCESS

A. Introduction

The customer service and revenue process task area includes the following topics specified in the request for proposals.

- Identify specific management and administrative areas with potential for improvement and develop an action plan to address those areas more extensively, including Customer Service, Meter Reading, Billing and Collections.
- Identify the root cause(s) for MCWD's significant water loss and assist MCWD in the development of near-term and long-term water loss reduction and control programs.

The tasks and subtasks for this task area were:

- Interviews
- Data requests and analysis
- Informal discussions with Board, District and PSC representatives
- Deliverables
 - Draft task report
 - Three party meeting to discuss the draft task reports
 - Final task report
 - Action plans

The scope of the capital process task area includes:

- New customers and credit
- Main and service extensions, tap fees, deposits
- Revenue cycle (meter reading, billing, cashiering, payment processing and collections)
- Customer service and complaints

The audit objectives and evaluative criteria for the customer service and revenue process task area are:

- Are water losses due to theft reasonable?
- Are meters registering consumption accurate?
- Are meter reading and billing processes effective?
- Are collections processes effective?

- Can MCWD participate in and benefit from the Martin County enhanced 911 GIS/GPS project?
- Is customer service adequate?
- Are customer services provided consistent with Commission and tariff requirements?
- Are revenue cycle systems of internal controls adequate?

B. Background

MCWD provides service to 1,382 “A-Section” water customers, 2,153 “B-Section” water customers, and a handful of sewer customers. The District provided service to 259, or eight percent, more customers at December 31, 2006, than January 1, 2001.

The Customer Service office, which recently relocated to the more convenient Martin County Community Center in Inez, is managed by an Office Manager and two part-time Customer Service Representatives (CSRs). Customers and prospective customers contacting the District may do so in person or by telephone at this office. In addition, the bank in Warfield accepts customer’s payments.

For customers requiring field service (e.g., service connection or disconnection), a Work Order is completed by customer service office personnel. These work orders are picked-up by distribution personnel to be completed in the morning and during the day in an emergency. Completed work orders are returned to the customer service office at the end of the day.

Meter reading is performed by two, part-time salaried employees: one meter reader reads A-Section meters and the other reads B-Section meters. Meters are read monthly and customers are billed monthly; however, the District does not bill its customers on a cycle basis (that is, throughout the month as meter routes are completed) and the District does not rotate meter readers. The A-Section meter reader has been reading meters for approximately four years while the B-Section meter reader has been reading meters for only six months.

In a typical month, the meter readers pick-up their meter reading books on about the 15th of the month. Meters will then be read from about the 15th to the 27th. Meter readings will be entered into the billing system and reads verified from about the 28th to the 30th or 31st. Bills will be printed on the 30th or 31st and mailed on the 1st or 2nd of the following month.

C. Findings and Conclusions

1. Customer service is effective except that customer’s requests for service taps are not worked promptly.

- BWG observed that walk-in customers and customers telephoning the District received prompt and courteous attention.
- The new customer service office is conveniently located.
- There is a significant back log of requested service taps. The District will not take a customer’s payment for the service tap fee because the District is then

obligated to provide that service within a given time period which cannot be met with current staffing levels.

2. Controls are generally adequate to ensure the accuracy of customers' bills except that procedures to monitor for high usage may not be in compliance with the District's tariff.

- Each entered meter reading is checked against the meter reading book by the CSRs to ensure it has been entered properly.
- If the current month meter reading is less than the prior month meter reading, an adjustment will be made to the customer's bill.
- The District relies on its customers to determine whether a meter reading was too high. It is not common in the industry to rely almost exclusively on customers' calls before investigating potential high bills. However, based on interviews with customer service representatives, meter readers and the distribution employee assigned to perform field customer service, the number of high bill complaints is minimal.
- Tariff Sheet 19 requires the District to monitor customer usage at least annually and, if usage is 100 percent or more above historical levels, test that meter for registration error.

3. Appropriate procedures and checklists exist and are used for customer service activities.

- CSRs complete a daily checklist of activities that are to be completed to ensure all work gets done.
- Written procedures exist for customer service office activities and are contained in a binder readily available to all CSRs.

4. Procedures to identify theft of service are incomplete.

- Meter readers will report suspected theft of service based on evidence of meter tampering or neighbors reports. These reports are promptly investigated.
- Customers found to have been involved in theft of service are not prosecuted. According to the County Attorney, he would be pleased to assist the District with the prosecution of these cases and at no cost other than court fees to the District.²²
- District employees receive no financial incentive for the detection of theft of service and recovery of lost revenues.
- The County's enhanced 911 service, which will be implemented in 2007, provides an opportunity to confirm who is receiving District-supplied water. This information could then be matched against District billing records to identify theft of service.

²² Based on a discussion with Martin County Attorney Kennis Maynard on November 15, 2006.

- Based on interviews with District personnel, it does not appear that theft of service is a major contributor to the water loss problem. However, in addition to the use of “cheater” bars to bypass residential water meters there are anecdotal reports of improper use of water from fire hydrants, that is, other than use by the fire departments.

5. Procedures to collect past due accounts are inadequate.

- CSRs check past due accounts receivable for customers applying for new service and will not prepare a work order for service to be turned-on without having first collected the past due balance (or made payment arrangements for the collection of the past due balance) and a meter deposit.
- The District has not sent out disconnect notices for six months. As a result, no customers have had their service disconnected for non-payment during that time.
- Recently, the District has started printing notices on bills that past due accounts may be shut-off for non-payment. According to the Office Manager, this has prompted some customers to pay past due balances. Printing this notice avoids the cost of mailing a separate disconnect notice, but does not satisfy Commission requirements for notification prior to actual physical disconnection for non-payment.
- The District does not call customers in an attempt to collect past due balances and does not turn accounts over to collection agencies.
- Tenants rather than landlords are generally responsible for water bills in rental properties.
- The County Attorney has indicated a willingness to prosecute individuals for non-payment of bills.

6. Meter reading controls are inadequate.

- Meter reading routes are not rotated and meter readings are not spot-checked by supervisors for accuracy.
- Prior meter readings are shown in the meter reading book which provides an opportunity for meter readers to ‘curb’ meter readings. Curbing refers to the practice of entering a meter reading into the meter reading book without having actually read the meter. However, there is no evidence that suggests that the curbing of meter readings is occurring.
- The Office Manager requested in October 2006 that meter readers write an explanation in the meter reading book when unable to obtain a meter reading. While this information will be valuable in monitoring meter reading performance, the information has not been compiled since October due to a lack of resources. In addition, no specific action has been taken based on the information reported for October.

- In October 2006, 70 A-Section meters, or 5 percent of all A-Section meters, were not read and 46 B-Section meters, or 2 percent of all B-Section meters were not read.
- All B-Section no-reads were explained with only one meter not read because it could not be located. Sixty-one percent of all A-Section no-reads did not have an explanation, and of the unread meters with an explanation, over one-half were because the meter could not be located.
- Routine reporting and analysis of meter reading performance does not include monitoring the percentage of meters read by meter reader by month, the percentage of meter reading errors per meter reader per month, and the identification of the number meters not read by reason (e.g., can't find, hazardous condition, covered by water).

7. Meter reading costs are slightly below the industry average, and can be further reduced.

- The District pays approximately \$0.81 per meter reading, including labor and transportation costs.²³ The water industry average based on a 2005 study is \$0.82 per meter reading for comparable costs.
- The District's difficult terrain and lack of density suggests that costs to read meters should be higher than the industry average.
- The District attempts to read each meter monthly.
 - Water utilities commonly read residential meters less frequently than monthly. In some jurisdictions, meters are read bi-monthly or quarterly.
 - These utilities may then bill customers coincident with the meter readings or bill customers monthly using estimated meter readings in those months in which actual reads are not obtained.
- Some meters are difficult to locate and reach due to the inconsistent placement of meters and the terrain in which those meters are located.
- Meter readers do not have all the tools needed to complete their routes timely and safely.
 - Meters readers do not have hand pumps for the removal of water from meter pits
 - Meter readers do not have devices (e.g., pepper spray) that can be used to protect the meter reader from hazardous situations

8. The meter reading-to-billing cycle does not maximize cash flow to the District.

- Meters are read from approximately the 15th to the 29th of each month and are billed at month-end.
- For meters read on the 15th, it is over two weeks before those accounts are billed.

²³ BWG calculation based on payroll documents provided by the District.

- Cash flow could be improved
- 9. Mis-read meters and un-read meters do not appear to have contributed noticeably to the lost water problem.**
- In January 2007, as a test of the accuracy of meter readings, the Office Manager whited-out the previous meter reading from the meter reading book for selected meter routes. If the previous month meter readings were not accurate, BWG expected this test to identify instances in which the current month consumption was not reasonable compared to prior months. This was not the case.
 - As mentioned above, there are several A System meters that could not be located in October. This problem may have existed for some time, but no records exist to confirm this.
 - Some of the lost water problem is likely due to mis-read and un-read meters, but these meters are not a significant contributor to the lost water problem.
- 10. While likely to provide some benefits, it is unlikely that the AMR pilot project can be cost-justified if the expenditure was based on borrowed or revenue-generated funds.**
- The District has contracted for the installation of 400 AMR devices at a cost of \$94,500.
 - The AMR pilot program is totally funded by grants. As a result, there was no cost-benefit study prepared to justify this expenditure.
 - This meter requires that a meter reader drive by in order to pick-up the radio transmitted meter reading, thus resulting in some efficiency gains.
 - The meters to be installed will be more tamper-proof, will generate a “tamper notice” if the wire is disconnected, and even if the wire disconnected, the meter will continue to record water consumption.²⁴ Therefore, the AMR devices will be more effective against theft-of-service than the current meters.
- 11. Bad debt records do not exist so trends in delinquencies are unknown. As a result, it is impossible to determine whether delinquent accounts receivable are increasing, decreasing or staying the same**
- 12. Meter test records indicate that metering inaccuracies are not a significant contributor to lost water.**
- BWG reviewed the Quarterly Meter Reports provided to the Commission since 2003. These reports document the test results for meters removed from service.
 - For meter tests reported since 2003, the majority of the meters tested less than two percent slow as shown in **Exhibit IV-1**.

Exhibit IV-1

²⁴ Based on discussion with the Sensus area representative for Wisconsin and Minnesota on January 29, 2007.

Meter Test Results

Period Covered	Within 2%+/-	More than 2% Fast	More than 2% Slow	Did Not Register
Apr-Jun 2003	30	1	1	0
Jul-Sep 2003	NA	NA	NA	NA
Oct-Dec 2003	NA	NA	NA	NA
Jan-Mar 2004	1	2	12	0
Jul-Sep 2004	16	4	8	0
Oct-Dec 2004	0	0	4	0
Jan-Mar 2005	132	0	2	0
Apr-Jun 2005	10	0	1	0
Jul-Sep 2005	0	0	0	0
Oct-Dec 2005	7	0	0	0
Jan-Mar 2006	0	0	0	0
Total	196	7	28	0

Source: Quarterly Meter Report to the Kentucky Public Service Commission.

13. Customer payments could be processed more quickly, thereby making cash available sooner for bill payment and other District needs.

- Since moving to the new customer service office, mail is now delivered by the United States Postal Service at 2:30 PM rather than in the morning, as was the case at the former location.
- Customer payments that arrive in the 2:30 PM mail are processed the next day.
- After processing, customer payments will be taken to the bank for deposit. However, the bank deposit will be made at 4:00 PM, after the 2:30 PM bank cut-off for same day posting.
- As a result, for example, payments delivered by mail on Tuesday will be processed and deposited on Wednesday but not posted to the District's account until Thursday.

D. Recommendations

1. Improve procedures to identify theft of service. (Refers to Finding No. 4)

- Provide incentives to meter readers and other District employees to identify thefts of service that lead to the recovery of amounts owed to the District.

- Use the County Attorney to recover amounts owed for the theft of service and publicize the District's intent to do so.
 - Use the 2007 Martin County enhanced 911 GIS/GPS initiative to identify premises receiving District-supplied water who are not being billed for that service.
2. **Establish procedures and take action necessary to assure compliance with MCWD Tariff Sheet No. 19.** (Refers to Finding No. 2)
 3. **Improve collections of past due accounts** (Refers to Finding No. 5)
 - Change credit policy so that responsibility for the payment of water bills remains with the landlord rather than tenant for rental properties. This will help reduce the number of uncollectible accounts going forward.
 - Send disconnect notices to those customers who have not paid their bills on time as allowed by Commission-approved rules and regulations.
 - Use the County Attorney to recover delinquent past due accounts.
 4. **Improve meter reading controls.** (Refers to Finding No. 6)
 - Perform periodic rotation of meter reading routes
 - Develop and implement monthly performance reporting and analysis processes
 - Perform supervisory test inspections of meter readings, including meters not read
 5. **Provide meter readers additional tools to complete their routes timely and safely.** (Refers to Finding No.7)
 - Provide hand pumps for the removal of water from meter pits
 - Provide devices (e.g., pepper spray) that can be used to protect the meter reader from hazardous situations
 6. **Consider implementing cycle billing to shorten the meter reading-to-billing cycle and improve cash flows to the District.** (Refers to Finding No. 8)
 7. **Consider implementing bi-monthly meter reading for residential customers while continuing to bill customers monthly.** (Refers to Finding No. 7)
 8. **As services are replaced, those meters located in difficult to read locations should be moved to locations that are less difficult to reach and placed in a consistent manner relative to the main and customer's premises.** (Refers to Finding No. 7)
 9. **Complete a cost-benefit study of AMR prior to making further investments in AMR technology.** (Refers to Finding No. 10)

10. Process customer payments on the day received so the payments are posted to the District's account on the day received. (Refers to Finding No. 13)

CHAPTER V
ADMINISTRATIVE AND GENERAL PROCESSES

A. Introduction

The administrative and general task area includes the following topics specified in the request for proposals.

- Identify specific management and administrative areas with potential for improvement and develop an action plan to address those areas more extensively, including:
 - Organization and General Management
 - Financial Management, including a Review of Accounting Procedures and Controls and an Analysis of Overall Expense Trends
 - Management’s Relationship with MCWD’s Board of Commissioners
- Assess the reasonableness of MCWD’s rates and the need for a rate adjustment.

The tasks and subtasks for this task area were:

- Interviews
- Data requests and analysis
- Informal discussions with Board, District and KPSC representatives
- Deliverables
 - Draft task report
 - Three party meeting to discuss the draft task reports
 - Final task report
 - Action plans

The scope of the capital process task area includes:

- Governance
- General management and organization structure
- Benchmarking
- Rates and rate design
- Accounting
- Human resources
- Information technology
- PSC compliance and relationship

The audit objectives and evaluative criteria for the administrative and general processes task area are:

- Are rates adequate?
- Is rate design optimal?
- Are accounting and financial transactions properly controlled?
- Are administrative policies and procedures adequate and up-to-date?
- Are personnel policies and procedures adequate and up-to-date?
- Are adequate controls in place to ensure that regulatory requirements, including Commission requirements, are complied with?
- Are governance practices adequate?
- Are management practices and organization structure adequate?
- Is information technology (hardware and software) adequately and properly controlled?

B. Background

MCWD is governed by a three member Board of Commissioners. The District is headed by a General Manager (GM), however, all functional areas do not report to the General Manager. The office manager, who is responsible for customer service, billing, remittance processing and collections primarily takes direction from a local CPA, a non-District employee who is also responsible for finance and accounting for the District. The activities of this individual (the CPA) related to the District are directed by the Board of Commissioners.

The General Manager has responsibility for all water provisioning activities (see Chapter III) and field customer service activities such as meter re-reads, shut-off and turn-on of water service, and tap installations. Responsibility for meter reading is shared between the GM and the Office Manager. Capital planning and funding is a responsibility primarily directed by the Board.

Rates have not increased since the mid-1990s. The District will increase its rates in connection with obtaining funds from Rural Development (RD) in connection with a new water tank project. Kentucky law allows for water utility rates to be changed as a result of certain construction projects without the utility having to go through a general rate case. One condition of obtaining the RD funding is the maintenance of a debt service coverage ratio of 1.1; a coverage ratio the District cannot achieve without a significant rate increase. The rate increase was expected to take place in 2006. However, due to delays in the funding process the increase has not yet occurred. Most recently, the planned January 2007 increase has been delayed due to property title issues associated with the location of planned new water tank.

Kentucky Administrative Regulation 278.023 requires the Commission to issue a certificate of necessity and convenience and such other orders as may be required to implement the terms of agreements between the water utility and federal agencies providing funding for construction projects such as the abovementioned RD project within 30 days of

the filing. Because federal funding of such projects entails prior review and oversight by the federal agency and obligates the utility to certain actions, the State of Kentucky requires that such agreements be accepted by the Commission. The Commission shall not prohibit the inclusion of any cost or the use of any accounting procedure in reviewing or setting the rates of the utility if such cost or procedure is required as a condition for federal funding of a construction project under an approved agreement between the water utility and the federal agency.

Exhibit V-1 presents the District's income statements for fiscal years 2001 through 2006 and **Exhibit V-2** presents the District's balance sheets as of December 31 for fiscal years 2001 through 2006.

Exhibit V-1
MCWD Income Statements
2001 - 2006

	2006	2005	2004	2003	2001
Operating Revenues	\$1,135,790	\$1,067,083	\$1,158,589	\$1,156,159	\$969,744
Operating Expenses:					
Salaries and Wages	431,633	437,323	210,580		265,823
Pensions and Benefits	102,793	59,446	28,644		13,642
Purchased Water	8,688	17,060	12,344		10,032
Purchased Power	179,697	179,785	78,161	7,304	140,288
Chemicals	51,187	38,453	21,188		49,923
Materials and Supplies	54,430	83,113	92,777	22,451	58,689
Contractual Services – Engineering	0				9,132
Contractual Services – Accounting	39,050	39,000	33,750		16,615
Contractual Services – Legal	0	3,000			0
Contractual Services – Management Fee	5,000	0	426,735	850,194	2,000
Contractual Services – Water Testing	17,807	12,227	6,939		
Contractual Services – Other	5,734	16,350	41,770	69,537	13,985
Rental of Buildings and Equipment	2,000	308	3,702		
Transportation Expense	28,278	28,997	16,841	1,269	10,405
Insurance – Vehicles	10,094	10,054	9,056	6,305	6,651
Insurance – General Liability	20,457	23,461	18,385	18,916	15,940
Insurance – Workers Comp	21,584	29,345	0		4,884
Insurance – Other	4,907	39,207	2,402	1,950	38,009
Advertising	520	686	3,091	753	451
Bad Debt Expense	24,631	22,153	22,537	10,035	0
Miscellaneous Expense	23,914	20,491	9,165	4,706	44,353

	2006	2005	2004	2003	2001
Total Operating Expenses	1,032,404	1,060,279	1,038,067	993,460	700,822
EBITDA	103,386	6,804	120,522	162,699	268,922
Depreciation Expense	552,015	527,490	531,518	539,450	355,784
Taxes Other than Income Taxes	35,069	37,392	38,471	0	28,472
Utility Operating Income	(483,698)	(558,078)	(449,467)	(376,751)	(115,334)
Other Income (Deductions)	746	1,261	521	1550	11,076
Interest Expense	115,644	116,924	101,736	105,498	110,265
Net Income	\$(598,596)	\$(673,741)	\$(550,682)	\$(480,699)	\$(214,523)

Source: Annual Reports filed with the KPSC

Revenues increased by four percent²⁵ per year from 2001 through 2006. This increase would have been larger had the RD loan-related rate increase occurred in 2006 as originally planned. At this same time, operating expenses increased by 10.2 percent per year, driven primarily by increases in salaries and wages, pensions and benefits, and workers compensation insurance which represent 81.9 percent of the \$332,000 increase in operating expenses from 2001 to 2006. Salaries and wages increased 12.9 percent per year, pensions and benefits increased 65.7 percent per year, and workers compensation insurance increased 45.0 percent per year during this period.

Exhibit V-2 MCWD Balance Sheets 2001 - 2006

	2006	2005	2004	2003	2002	2001
Assets and Other Debits						
Utility Plant	\$21,809,147	\$20,633,853	\$19,150,007	\$18,415,244	\$18,240,156	\$17,986,661
Accumulated Depreciation	7,008,728	6,456,713	5,929,223	5,397,705	4,858,255	4,423,591
Net Utility Plant	14,800,419	14,177,140	13,220,784	13,017,539	13,381,901	13,563,070
Special Funds	111,517	530,581	213,711	194,253	270,913	433,761
Total Long-Term Assets	14,911,936	14,707,721	13,434,495	13,211,792	13,652,814	13,996,831
Cash	72,823	54,465	52,366	86,868	129,376	49,594
Accounts Receivable	304,887	258,923	278,695	216,941	113,607	102,666
Materials and Supplies	17,529	19,834	27,042	40,102	40,516	40,316
Prepayments	6,833	4,717	2,873	14,761	9,874	15,463

²⁵ All of the percent increases in revenues and expenses from 2001 to 2006 discussed in this chapter represent compound annual growth rates.

	2006	2005	2004	2003	2002	2001
Accrued Utility Revenues	132,604	118,660	132,318	28,078	28,507	27,318
Total Current and Accrued Assets	534,676	456,599	493,294	386,750	321,880	235,354
Total Assets and Other Debits	\$15,446,612	\$15,164,320	\$13,927,789	\$13,598,542	\$13,974,694	\$14,232,185
Equity Capital and Liabilities						
Retained Earnings	\$(5,353,911)	\$(4,755,315)	\$(4,081,574)	\$(3,530,892)	\$(3,050,193)	\$(2,605,303)
Donated Capital / CIAC	17,293,679	16,720,939	14,966,046	14,197,636	13,996,723	13,880,154
Total Equity Capital	11,939,768	11,965,624	10,884,472	10,666,744	10,946,530	11,274,851
Long-Term Debt	2,479,108	2,570,464	2,608,436	2,538,555	2,614,853	2,688,859
Total Equity and Long-Term Debt	14,418,876	14,536,088	13,492,908	13,205,299	13,561,383	13,963,710
Accounts Payable	531,030	260,724	301,257	223,571	270,782	96,411
Customer Deposits	59,415	49,743	40,036	39,298	31,413	90,542
Accrued Taxes	1,407	380	8,246	0	7,063	1,678
Accrued Interest	71,970	36,229	4,603	37,598	12,404	3,841
Matured Long-Term Debt	277,228	237,972	45,819	76,298	60,806	41,844
Tax Collections Payable	70,773	33,442	26,833	16,478	26,073	2,849
Misc. Current and Accrued Liabilities	15,913	9,742	8,087	0	4,770	31,310
Total Current and Accrued Liabilities	1,027,736	628,232	434,881	393,243	413,311	268,475
Total Equity Capital and Liabilities	\$15,446,612	\$15,164,320	\$13,927,789	\$13,598,542	\$13,974,694	\$14,232,185

Source: Annual Reports filed with the KPSC

Utility plant increased by \$3.8 million from 2001 to 2006. \$3.4 million, or 89.5 percent, of this increase was funded by donated capital – primarily grants. Accounts receivable increased by \$200,000 from 2001 to 2006. At December 31, 2006, accounts receivable represent 26.8 percent of annual revenues compared to only 10.6 percent in 2001. While long-term debt decreased by \$210,000 from 2001 to 2006, accrued interest and current maturities of long-term debt increased \$303,000. Accounts payable at December 31, 2006 represented 51.4 percent of fiscal 2006 operating expenses compared to accounts payable at December 31, 2001, which represented 13.8 percent of fiscal 2001 operating expenses. Accounts payable increased by \$435,000 from 2001 to 2006. In total, current and accrued liabilities increased by \$759,000 from December 31, 2001 to December 31, 2006. The District has relied on its vendors to provide the cash flow needed to fund District operations

(by delaying the payment of amounts due for goods and services purchased) in the absence of a rate increase and effective collection practices.

Exhibit V-3
Actual to Budget Results
Fiscal Years 2005 and 2006

	2005			2006		
	Budget	Actual	Variance	Budget	Actual	Variance
Operating Revenues	\$1,214,000	\$1,067,083	\$(147,087)	\$1,440,000	\$1,135,790	\$(304,210)
O&M Expenses:						
Salaries and Wages	360,000	437,323	(77,323)	575,000	431,633	143,367
Employee Pensions and Benefits	31,808	59,446	(27,638)	118,700	102,793	15,907
Purchased Water	4,200	17,060	(12,860)	14,000	8,688	5,312
Purchased Power	156,000	179,785	(23,785)	180,000	179,697	303
Chemicals	27,000	38,453	(11,453)	40,000	51,187	(11,187)
Materials and Supplies	29,500	83,113	(56,613)	85,000	54,430	30,570
Contractual Services - Engineering	25,000	0	25,000	0	0	0
Contractual Services - Accounting	1,620	39,000	(37,380)	39,000	39,050	(50)
Contractual Services - Legal	0	3,000	(3,000)	3,000	0	3,000
Contractual Services - Testing	7,500	12,227	(4,727)	13,000	17,807	(4,807)
Contractual Services - Other	36,000	16,350	19,650	20,000	5,734	14,266
Rental of Equipment	0	308	(308)	4,000	2,000	2,000
Transportation Expenses	10,000	28,997	(18,997)	30,000	28,278	1,722
Insurance – Vehicle	4,300	10,054	(5,754)	10,500	10,094	406
Insurance – General Liability	25,442	23,461	1,981	24,000	20,457	3,543
Insurance – Workers' Comp	13,500	29,345	(15,845)	30,000	21,584	8,416
Insurance – Other	650	39,027	(38,377)	35,000	4,907	30,093
Advertising	1,000	686	314	1,000	520	480
Bad Debt Expense	0	22,153	(22,153)	22,000	24,631	(2,631)
Miscellaneous Expenses	20,000	20,491	(491)	20,000	23,914	(3,914)
Total Operating Expenses	753,520	1,060,279	(247,313)	1,264,230	1,032,404	231,826

	2005			2006		
	Budget	Actual	Variance	Budget	Actual	Variance
Operating Margin (EBITDA)	460,480	6,804	(453,676)	175,770	103,386	72,384
Depreciation Expense	500,000	527,490	(27,490)	535,000	552,015	(17,015)
Taxes Other Than Income Taxes	20,795	37,392	(16,597)	42,000	35,069	6,931
Interest Income	500	1,261	761	400	746	346
Interest Expense	105,500	116,924	(11,424)	110,500	115,644	(5,144)
Net Income	(165,315)	(673,741)	(508,426)	(511,330)	(598,596)	(87,266)
Capital Contributions	700,000	1,754,893	1,054,893	850,000	572,740	(277,260)
Change in Net Assets	\$534,685	\$1,081,154	\$546,467	\$338,670	\$(25,856)	\$(364,526)

Source: Response to Initial Data Request

The District experienced a revenue shortfall of over \$300,000 in fiscal 2006 due to the timing of the RD-related rate increase. To respond to this revenue shortfall, the District carefully managed its spending in fiscal 2006 so that the actual unfavorable net income variance was only \$87,000. Favorable expenses variances occurred in most budget line items, with the most significant variance being the \$143,000 favorable variance in salaries and wages. This contrasts sharply with 2005 in which actual expenditures exceeded budget for most expense line items. Budgeting appears to have significantly improved from fiscal 2005 to fiscal 2006. The \$143,000 favorable labor variance is due to delays in filling open positions in response to cash flow constraints. This includes two distribution crew positions.²⁶

Exhibit V-4 presents the District's Fiscal 2007 budget and compares the amounts budgeted to both Fiscal 2006 actual and budgeted results.

Exhibit V-4 Fiscal 2007 Budget Comparison

	Fiscal 2006		Fiscal 2007		
	Budget	Actual	Budget	Variance From 2006 Budget	Variance From 2006 Actual
Operating Revenues	\$1,440,000	\$1,135,790	\$1,597,000	\$157,000	\$461,210
O&M Expenses:					
Salaries and Wages	575,000	431,633	600,000	25,000	168,367

²⁶ Based on information provided by Raymond Sumpter on February 14, 2007.

	Fiscal 2006		Fiscal 2007		
	Budget	Actual	Budget	Variance From 2006 Budget	Variance From 2006 Actual
Employee Pensions and Benefits	118,700	102,793	118,700	0	15,907
Purchased Water	14,000	8,688	12,000	(2,000)	3,312
Purchased Power	180,000	179,697	190,000	10,000	10,303
Chemicals	40,000	51,187	60,000	20,000	8,813
Materials and Supplies	85,000	54,430	90,000	5,000	35,570
Contractual Services - Engineering	0	0	0	0	0
Contractual Services - Accounting	39,000	39,050	39,000	0	(50)
Contractual Services - Legal	3,000	0	3,000	0	3,000
Contractual Services - Testing	13,000	17,807	30,000	17,000	12,193
Contractual Services - Other	20,000	5,734	10,000	(10,000)	4,266
Rental of Building and Equipment	4,000	2,000	10,100	6,100	8,100
Transportation Expenses	30,000	28,278	35,000	5,000	6,722
Insurance – Vehicle	10,500	10,094	10,500	0	406
Insurance – General Liability	24,000	20,457	25,000	1,000	4,543
Insurance – Workers' Comp	30,000	21,584	30,000	0	8,416
Insurance – Other	35,000	4,907	10,000	(25,000)	5,093
Advertising	1,000	520	2,000	1,000	1,480
Bad Debt Expense	22,000	24,631	26,000	4,000	1,369
Miscellaneous Expenses	20,000	23,914	25,000	5,000	1,086
Total Operating Expenses	1,264,230	1,032,404	1,326,300	62,070	293,896
Operating Margin (EBITDA)	175,770	103,386	270,700	94,930	167,314
Depreciation Expense	535,000	552,015	560,000	25,000	7,985
Taxes Other Than Income Taxes	42,000	35,069	47,000	5,000	11,931
Interest Income	400	746	500	100	(246)
Interest Expense	110,500	115,644	115,700	5,200	56
Net Income	(511,330)	(598,596)	(451,500)	59,830	147,096

	Fiscal 2006		Fiscal 2007		
	Budget	Actual	Budget	Variance From 2006 Budget	Variance From 2006 Actual
Capital Contributions	850,000	572,740	1,250,000	400,000	677,260
Change in Net Assets	\$338,670	\$(25,856)	\$798,500	\$459,830	\$824,356

Source: Budget Summary of Martin County Water District

Fiscal 2007 budgeted revenues exceed Fiscal 2006 actual revenues by 40.6 percent. Fiscal 2007 budgeted operating expenses exceed Fiscal 2006 actual operating expenses by 28.5 percent and Fiscal 2006 budgeted expenses by 4.9 percent. The budgeted Net Loss for Fiscal 2007 is 24.6 percent less than the actual Net Loss for Fiscal 2006. The increase in operating revenues is due to the anticipated rate increase associated with the RD loan.

Compared to Fiscal 2001 actual results, the compound annual growth rate for revenues is 8.7 percent and for operating expenses is 11.2 percent.

C. Findings and Conclusions

1. Current rates are significantly below those of surrounding water districts.

- **Exhibit V-5** compares MCWD rates with those of surrounding water districts.

Exhibit V-5 MCWD Rate Comparison

District	Rate Structure
Martin County Water District	First 2,000 Gallons @ \$13.00 Minimum Over 2,000 Gallons @ \$3.05 per 1000 Gallons
Auxier Water District	First 1,000 Gallons @ \$12.15 Minimum Next 1,000 Gallons @ \$7.90 per 1000 Gallons Next 6,000 Gallons @ \$6.45 per 1000 Gallons Next 6,000 Gallons @ \$5.45 per 1000 Gallons Over 14,000 Gallons @ \$4.55 per 1000 Gallons
Big Sandy Water District	First 2,000 Gallons @ \$15.32 Minimum Over 2,000 Gallons @ \$5.76 per 1000 Gallons
Cannonsburg Water District	First 2,000 Gallons @ \$14.46 Minimum Next 3,000 Gallons @ \$5.13 per 1000 Gallons Next 15,000 Gallons @ \$4.75 per 1000 Gallons Next 30,000 Gallons @ \$4.37 per 1000 Gallons Next 50,000 Gallons @ \$4.00 per 1000 Gallons

District	Rate Structure
	Over 100,000 Gallons @ \$3.60 per 1000 Gallons
Knott County Water District	First 2,000 Gallons @ \$18.25 Minimum Next 8,000 Gallons @ \$5.63 per 1000 Gallons Over 10,000 Gallons @ \$4.55 per 1000 Gallons
Letcher County Water District	First 2,000 Gallons @ \$20.54 Minimum Over 2,000 Gallons @ \$4.75 per 1000 Gallons
Magoffin County Water District	First 2,000 Gallons @ \$13.86 Minimum Next 3,000 Gallons @ \$6.13 per 1000 Gallons Next 5,000 Gallons @ \$5.63 per 1000 Gallons Over 10,000 Gallons @ \$5.13 per 1000 Gallons
Morgan County Water District	First 2,000 Gallons @ \$19.41 Minimum Next 3,000 Gallons @ \$7.03 per 1000 Gallons Next 5,000 Gallons @ \$6.43 per 1000 Gallons Next 5,000 Gallons @ \$5.83 per 1000 Gallons Over 15,000 Gallons @ \$5.25 per 1000 Gallons
Mountain Water District	First 2,000 Gallons @ \$18.00 Minimum Over 2,000 Gallons @ \$5.16 per 1000 Gallons
Rattlesnake Ridge Water District	First 1,000 Gallons @ \$12.50 Minimum Next 4,000 Gallons @ \$7.90 per 1000 Gallons Next 5,000 Gallons @ \$6.80 per 1000 Gallons Next 10,000 Gallons @ \$5.80 per 1000 Gallons Next 20,000 Gallons @ \$4.00 per 1000 Gallons Over 40,000 Gallons @ \$3.10 per 1000 Gallons
Southern Water and Sewer District	First 2,000 Gallons @ \$16.50 Minimum Over 2,000 Gallons @ \$5.50 per 1000 Gallons

Source: O'Brien & Gere

- The RD rate increase is expected to increase revenues by approximately 50 percent; with the minimum charge increasing from \$13.00 to \$18.00 per month.
- 2. Even with the RD rate increase, rates will not be sufficient to fully fund all needed activities.**
- The RD rate increase was based on the 2006 Budget and assumptions related to debt service for the new debt and the refinancing of a small amount of existing debt. Annual debt service costs funded by the RD rates are \$400,080 (\$217,855 of principal and \$182,225 of interest).

- The RD rate increase provides for \$43,000 for the replacement of short-lived assets annually as follows:
 - Computers, Billing Program and Small Pick-up Trucks (1-5 year life) - \$4,500
 - Class 4 Vehicles (6-10 year life) - \$8,500
 - Storage Tanks, Pump Stations (11-15 year life) - \$30,000
 - The RD-required coverage ratio of 1.10 provides \$39,605 annually for “Coverage and Depreciation.”
 - The 2006 Budget does not fund expenditures needed to reduce water loss as discussed in Chapter II, Water Provisioning Process. (See Recommendation II-1).
 - While the eventual reduction of water loss will reduce certain expenses (i.e., chemicals, electricity, leak repair), these expenses cannot be reduced without first making those expenditures required to reduce the water loss.
 - The District is discussing opportunities to consolidate and re-finance debt with the Kentucky Infrastructure Agency (KIA). If certain conditions are met, the new interest rate may be as low as one percent. However, reductions in debt service costs resulting from reducing interest rates to one percent may be offset by a shortening of the debt repayment period. MCWD has issued debt with maturities up to forty years. KIA debt would have a repayment period of no more than twenty years.
 - Efforts to collect past due accounts receivable and reduce theft of service as discussed in Chapter IV, Customer Service and Revenues, will also serve to partially mitigate the need for future rate increase.
 - At September 30, 2006, MCWD had accounts payable over 90 days which totaled \$228,339.46. Future revenue streams should be sufficient to keep accounts payable current and reduce these significantly past due accounts payables. The accounts payable over 90 days include \$15,200 to the CPA firm that completed the financial audit of the District’s fiscal 2001 financial statements and \$91,500 to the CPA firm currently providing finance and accounting services to the District.
 - The District was 40 days late on the payment due in December 2006 for its existing RD loans and was close to being put on the federal default list.²⁷
- 3. The roles and responsibilities of the General Manager and Board of Commissioners are not clearly defined and the organization is not appropriately structured as the District evolves from its crisis mode of operations.**
- The current organization structure in which all functional areas do not report to the General Manager and in which members of the Board of Commissioners have significant hands-on involvement in the day to day operations of the District is not typical in the utility industry.

²⁷ Based on interview with Holly Nicholas, O’Brien & Gere, on January 11, 2007

- As noted in Chapter One, many significant problems facing the District over the past few years have been fixed in large part by the active participation of the individual members of the Board of Commissioners.
 - Given that so many of these problems have been resolved, the District should evolve back to a more traditional organization and management structure for the day-to-day operations of the District. That is, an organization structure in which all functional areas report to the General Manager and the Board of Commissioners becomes an oversight body rather than one involved in the day-to-day activities of the District.
 - The General Manager does not currently direct accounting and finance and customer service activities (i.e., the business office activities).
- 4. The members of the Board of Commissioners are not properly compensated for services provided.**
- Board members receive no compensation from the District.
 - Board members view the services they provide to the District as a personal and civic responsibility. These services and the level of effort expended by the current Board on behalf of MCWD ratepayers has been significant.
 - MCWD ratepayers should not expect that Commissioners continue to provide these services on a volunteer basis.
- 5. The District has written policies and procedures that are current, including:**
- Code of Ethics
 - Confidentiality Policy
 - Sexual Harassment Policy
 - Personnel Policies and Procedures
 - Fiscal Policies
- 6. Financial audits have not been completed for years subsequent to fiscal 2001.**
- The last audited financial statements are for the year ended December 31, 2001.
 - The District does not currently have the funds to pay for annual financial audits.
 - The CPA firm hired to complete the Fiscal 2001 audit was not fully paid as of September 30, 2006.
 - The local CPA firm's independence is impaired given their primary role in developing the District's financial statements. Therefore, they will be unable to be engaged to audit those financial statements
- 7. The District has now filed all required regulatory reports.**

- However, the District only recently became current in its regulatory filings (e.g., Annual Reports) with the Commission after having been delinquent for several years.
- The District is required to complete separate Annual Reports for both water and sewer operations.
 - Annual Reports for water operations had been completed through 2005 at the time the audit started.
 - Annual Reports for sewer operations had not been completed for several years. The District was hoping to avoid the time and expense of the sewer reports since there are only four sewer customers, but a waiver could not be obtained from the Commission.
 - The 2006 Annual Reports and the delinquent sewer reports were submitted to the Commission in early 2007.
- The District relies on its outsourced provider of accounting services to prepare both regulatory and financial reports. As of September 30, 2006, the District had not paid invoices for these services since July 2003.

8. The District’s Fiscal Policies are generally reasonable for a utility of its size.

- The District has well-defined and up-to-date Fiscal Policies.
- All finance and accounting services are provided by an outside CPA firm. According to the firm’s response to the District’s RFP, it will provide services to the District including but not limited to:

“(A)ccounts payable services with purchase order system development and maintenance, accounts receivable service development and reconciliation, cash reconciliation and internal control development and maintenance, complete payroll services and reporting, relative accounting services and general ledger maintenance in accordance with the PSC prescribed chart of accounts, special reporting as needed including PSC reports, budgeting and analysis, assistance with required audits, and other accounting services as required for a flat fee of \$3,250 per month.”

- While members of the Board of Commissioners interact frequently with the outside CPA firm, no one at the District appears to have the financial expertise needed to provide accounting direction or perform effective analyses of financial results.
- The District’s Fiscal Policies do not provide for active involvement of the General Manager. For example, the role of the General Manager related to budget development and approval and the approval of disbursements is not defined in the Fiscal Policies. Also, the General Manager does not see financial results and budget variances until the financial information is presented to the Board each month.

- The accuracy of accounts receivable balances is in question as a result of the difficulty reconciling information coming from the billing / customer information system.
- Checks are signed by members of the Board of Commissioners.
- Bank accounts are reconciled on a timely basis. The District has the following bank accounts:

**Exhibit V-6
District Bank Accounts and Balances at September 30, 2006**

Description	Bank Balance at 9/30/06	Level of Activity
128b-04-138-6 Sec B Depreciation	\$3,586.97	None ²⁸
131.2b-04-137-8 Sec B Revenue	\$49.82	None
132b-10-550-3 Sec B Security Deposit	\$53,186.67	Low
128a-17-492-0 Sec A Depreciation	\$1,041.46	None
126a-17-493-9 Sec A Sinking Fund	\$196.91	None
132a-18-445-4 Sec A Security Deposit	\$15,634.85	Low
127a-51-136-6 Sec A KIA - Other Special Fund	\$621.65	None
131.2a-51-757-7 Sec A Revenue	\$55,222.15	High
131.4b-76-994-0 Payroll	\$16,511.75	Medium
129-56-407-9 Grant Fund	\$103,875.30	Low
133b-53-694-6 Rockhs Project – Other Special Deposit	\$104.40	None
133b-52-720-3 Airport Project – Other Special Deposit	\$8,196.74	None
126b-04-135-1 Sec B Sinking Fund	\$1,276.05	None
131.3b-04-134-3 Operations and Maintenance	\$15,124.98	Medium

Source: District Response to Initial Data Request and BWG Analysis

- 9. While the District has taken advantage of some State sponsored training for management staff and members of the Board of Commissioners in the past, it has not taken full advantage of the training offered by the State and the Kentucky Rural Water Association.**

²⁸ Service charges and / or interest only

10. Information technology (hardware and software) is sufficient to meet the basic needs of District employees.

- Hardware appears to be up-to-date.
- Microsoft Office applications are available to District employees.
- Accounting software is owned by the outsourced provider of finance and accounting services.
- The District is in the process of installing a new Customer Information System.

D. Recommendations

1. The District should file a rate case with the Kentucky Public Service Commission.
(Refers to Finding No.2)

- This increase is needed to provide funding for increased resources that cannot be funded by the implementation of its RD-related rate increase.
- The additional expenses not included in the 2007 budget (and, as a result, not funded by the RD rate increase) include: (a) wages and benefits for a four man distribution crew and water treatment plant operator, (c) new Service Building-related costs, (d) vehicle expenses for the new crew, (e) annual audit fees, (f) Board of Commissioners salaries, and (g) debt service costs to fund the main and service replacement program. These additional expenditures could total in excess of \$250,000 per year.
- Within twelve months of reducing its water loss to 15 percent, the District should be required to file a subsequent rate case to determine its on-going revenue requirements.

2. Clearly define the roles of the Commissioners and General Manager. The definitions should be explicit as to the scope and limits of authority, the types of decisions that can be made, and areas of responsibility. (Refers to Finding No. 3)

- Change the District's management and governance processes so that the General Manager has responsibility for all functional areas, including finance and accounting and customer service. (See Recommendation No. 7)
- Clearly define decision making responsibilities for the following:
 - Personnel matters (e.g., hiring and firing, authorizing overtime, pay raises for individuals, benefits)
 - Financial decisions (e.g., spending authorization, limits on the ability to commit the District to contracts, spending outside the budget)
 - Operating decisions (e.g., setting construction and maintenance priorities)
- Expand the District's Fiscal Policies to fully define the role of the General Manager including roles related to budget development and approval, variance analysis, and disbursement approval.

- The objective is to eliminate any overlap between the Board and the General Manager. The General Manager should have full authority for all decisions in his areas of responsibility, with the Board providing after-the-fact oversight.
3. **As soon as funding is available, begin to pay the members of the Board of Commissioners salaries based on guidelines provided by Kentucky Administrative Regulations.** (Refers to Finding No. 4)
 - Include Board salaries as an operating expense in the 2007 budget, the RD loan application, and the KPSC rate case, when filed.
 4. **As soon as funding is available, arrange for an external audit of the District's financial statements and then continue these audits on a timely basis going forward.** (Refers to Finding No. 6)
 5. **As soon as funding becomes available, establish a position of bookkeeper / accountant with responsibility for accounting and other transactional accounting processes.** (Refers to Finding No. 8)
 - Check signing and bank account reconciliations should remain separate from the duties of the bookkeeper / accountant.
 - In the event the District pursues the regionalization of certain functions, this could be a function that becomes regionalized. (See Recommendation 6)
 6. **The District should encourage its management staff and the members of the Board of Commissioners to take better advantage of State-sponsored training opportunities.** (Refers to Finding No. 9)
 - Include training fees and out-of-pocket expenses as an operating expense in the 2007 budget, the RD loan application, and the KPSC rate case, when filed.
 7. **Consider increased regionalization to achieve economies of scale and reduce vulnerabilities to supply and personnel interruptions.** (Refer to Chapter II, Findings 3 and 9)
 - MCWD lacks adequate scale to provide consistently all professional functions necessary, such as engineering, laboratory, bookkeeping, and pollution control.
 - An unplanned loss of personnel in any section creates immediate problems in timely completion of work or performance of critical functions.
 - MCWD relies on free or low cost services not under its control for technical services. These services are provided by DOW, Kentucky Rural Water Association and Big Sandy.
 - MCWD lacks significant scale to leverage lower costs from suppliers and cannot maintain a full inventory of materials.