

MEMORANDUM

Date: October 30, 2008

To: Richard Riebeling, Metro Government, Dept. of Finance

**From: Lex Warmath, Melissa Levin
Raftelis Financial Consultants, Inc.**

RE: Results of Benchmarking Analysis for Metro Water Services

In July of 2005, as part of RFC's assistance to the Metropolitan Government of Nashville and Davidson County ("Metro Government"), RFC completed a benchmarking analysis to assess the financial performance and cost efficiency of Metro Water Services ("MWS"). The objective of the benchmarking study was to evaluate the efficiency of MWS current operations as compared to other utilities, and to identify any areas where MWS appeared to be less cost effective. The benchmarking study focused on higher-level cost, rate and financial information, rather than specific operational metrics, in an effort to focus on the total cost and financial performance of MWS. The benchmarking study was based on information from the 2004 Water and Wastewater Rate Survey co-developed and co-produced by American Water Works Association ("AWWA") and RFC.

As part of our continuing assistance to Metro Government and MWS, RFC was asked to update this benchmarking analysis to reflect information from the 2006 Water and Wastewater Rate Survey ("Rate Survey"). The 2006 Rate Survey, also co-developed and co-produced by AWWA and RFC, provides information on water and wastewater charges for a diverse and meaningful sample of US cities. Water data are provided for 230 utilities and wastewater data for 164 utilities. The data represents utilities from 49 states and the District of Columbia. The Rate Survey is completed every two years, and 2006 Rate Survey data is the most recent information available for completing the benchmarking study.¹

Within the 2006 Rate Survey database, utilities are grouped into three utility classifications, Group A, Group B, and Group C based on gallons of water sold, measured in million gallons per day (MGD), and by gallons of wastewater treated, measured in MGD. Because utilities often treat less wastewater than billed water use, the group ranges for wastewater have been adjusted. The following table provides the levels that were included in each group.

¹ No attempt is made in this memorandum to make comparisons between the cost, revenue or capital improvement plan ("CIP") information reported in the 2006 Rate Survey and current cost, revenue or CIP information for MWS. A separate Technical Memorandum, titled Capital Improvement Plan Review, prepared by McKim & Creed, provides a more detailed assessment of the current MWS CIP.

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Group	Water Sold	Wastewater Treated
Group A	> 75 MGD	> 70 MGD
Group B	20-75 MGD	20-70 MGD
Group C	<20 MGD	<20 MGD

For water, MWS was listed in Group B with daily gallons sold only slightly below the cut-off level of 75 MGD at 68 MGD. For wastewater, MWS was listed firmly in Group A with 146 MGD of wastewater treated. Treated wastewater flows for MWS are roughly twice that of the water sold due to the large amount of stormwater flows treated by MWS from combined sewer and stormwater piping, and as a result of a number of wholesale customers who deliver flow to MWS for treatment. Rather than use two different comparison groups (Group A for wastewater and Group B for water), RFC chose to use the fifteen utilities listed above and below MWS in the survey based on size, as measured in terms of average MGD of water or wastewater treated. A complete listing of the all the water and wastewater utilities included in the benchmarking analysis has been provided in the Appendix.

Observations:

To facilitate the comparisons in the 2005 benchmarking analysis, we chose to group the various metrics into several broader performance categories, and base our observations on a comparison of MWS’s results on all the metrics within each category. For the updated 2008 benchmarking analysis (based on the 2006 Rate Survey data), we have chosen to group the metrics into the same categories as used in the prior 2005 benchmarking analysis. These four categories include: 1) financial leverage, 2) projected capital needs, 3) operating and total expenses, and 4) costs relative to full-time equivalent employees.

1) Financial Leverage:

Financial leverage looks at the level of total long-term debt outstanding and the ability to issue additional debt to address capital needs, often referred to as debt capacity. High levels of debt typically result in higher fixed costs for debt service and may put additional pressure on rates and revenues to address coverage requirements. The metrics available from the databases looked at total long-term debt outstanding measured per MGD produced/treated, number of customers, and population served, for water and wastewater, as shown in the tables below.

Water Metrics from Rate Survey	Long-Term Debt per MGD Produced	Long-Term Debt per Customer	Long Term Debt per Capita
Nashville, TN	\$ 2,229,029	\$ 1,296	\$ 417
Average	\$ 2,562,519	\$ 1,585	\$ 380
Median	\$ 1,903,703	\$ 1,267	\$ 249
Min	\$ 225,093	\$ 193	\$ 37
Max	\$ 9,387,099	\$ 5,331	\$ 1,370
Count	30	30	30

Wastewater Metrics from Rate Survey	Long-Term Debt per MGD Treated	Long-Term Debt per Customer	Long Term Debt per Capita
Nashville, TN	\$ 2,027,812	\$ 1,747	\$ 535
Average	\$ 4,189,401	\$ 53,808	\$ 594
Median	\$ 3,417,749	\$ 2,083	\$ 417
Min	\$ 790,077	\$ 347	\$ 61
Max	\$ 11,743,462	\$ 1,437,800	\$ 1,827
Count	28	28	28

Note: Two outliers were removed from this set of metrics. Atlanta was removed because of extremely high levels of debt, which had a significant impact on the average and median. Little Blue Valley Sewer District was removed since wholesale customers account for a significant portion of its total customer base, which skewed the results for long-term debt per customer.

Both the water and wastewater metrics indicate that MWS is less leveraged, on average, than the other utilities in their respective comparison groups. This result is consistent with the prior benchmarking study and with expectations, as MWS had not incurred additional debt to pay for either water or wastewater infrastructure in the time period immediately preceding when the survey data was collected, and has continued to pay down older debt, resulting in a less leveraged position. For wastewater, the long-term debt per MGD treated appears more favorable than the long-term debt per customer or per capita. This is most likely due to the fact that a significant portion of the wastewater flow treated by MWS is for stormwater flow and wholesale flow, which reduces the number of customers relative to the MGD treated.

It is important to note that since the information was reported for this survey, MWS has incurred additional state revolving fund debt to pay for wastewater infrastructure improvements related to bio-solids and odor control. As a result, MWS current status may indicate a more highly leveraged position for wastewater than indicated in the survey results. However, given MWS' position at the time of the survey, and the expectation that other utilities have also continued to invest in wastewater infrastructure, the relative position of MWS within the comparison group is unlikely to have changed.

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significantly. Another important point of interest is that the leveraged position between water and wastewater appears to have shifted since the prior benchmarking analysis. This is most probably the result of how the long-term debt was allocated between water and wastewater. Given recent analysis performed by both MWS and RFC, we believe that the current allocation provides a more accurate representation of MWS' current financial position.

2) Projected Capital Needs:

Where the Financial Leverage metrics provide a summary of the historical use of debt and an indication of debt capacity, it is also necessary to look forward at future capital needs as an important driver of future costs and rates. The metrics available in the databases focused on a five-year capital improvement plan ("CIP") and the capital needs identified per MGD produced/treated and per retail account, as shown below.

Water Metrics from Rate Survey	5- Year Capital per MGD Produced	5- Year Capital per Retail Account
Nashville, TN	\$ 1,704,846	\$ 992
Average	\$ 2,060,861	\$ 1,421
Median	\$ 1,693,199	\$ 1,158
Min	\$ 306,541	\$ 215
Max	\$ 5,191,463	\$ 3,641
Count	32	32

Wastewater Metrics from Rate Survey	5- Year Capital per MGD Treated	5- Year Capital per Retail Account
Nashville, TN	\$ 3,043,949	\$ 2,622
Average	\$ 2,654,757	\$ 1,712
Median	\$ 1,936,448	\$ 1,077
Min	\$ 229,785	\$ 264
Max	\$ 9,888,596	\$ 6,893
Count	30	30

The estimated five-year capital improvement plan metrics for water are relatively low in comparison to the average utility in the comparison based on information from the 2006 Rate Survey database. This lower level of planned capital expenditure is consistent with the observation that MWS has adequate capacity in their system, including redundant

water treatment capacity to address growth and reliability concerns, and had not identified significant water capital expenditures in the CIP.

On the wastewater side, the five-year capital improvement plan is somewhat higher than the average utility in the comparison group, which is likely due to the planned expenditures for the bio-solids and odor control projects that were initiated shortly after the time frame that the information for the 2006 Rate Survey was submitted. The bio-solids and odor control projects totaled roughly \$180.0 million and were funded primarily with state revolving fund loans and some Tennessee Local Development Agency loans (“TLDA”).

In comparison to the prior benchmarking study, the level of capital needs for wastewater has risen relative to the other utilities in the comparison group. For the water utility, the relative position appears to be unchanged and continues to compare favorably.

3) Operating and Total Expenses:

The 2006 Rate Survey information generates two metrics related to operating expenses: operating expenses per MGD produced/treated and operating expenses per retail customer. Other related metrics address total expenses per MGD, plus total and operating revenues per retail customer, as shown below. Operating expenses generally include all direct costs associated with operating the water and/or wastewater utility systems, including costs incurred for billing, collection, customer service, and meter reading and maintenance. Total expenses would also include any indirect costs, plus debt service and other capital expenditures.

Water Metrics from Rate Survey	Total Expenses per MGD Produced	Operating Expenses per MGD Produced	Operating Expenses per Retail Customer	Operating Revenues per retail customer	Total Revenues per retail customer
Nashville, TN	\$ 728,776	\$ 319,924	\$ 186	\$ 347	\$ 354
Average	\$ 949,311	\$ 620,042	\$ 354	\$ 558	\$ 586
Median	\$ 724,101	\$ 454,306	\$ 330	\$ 523	\$ 548
Min	\$ 381,799	\$ 314,151	\$ 155	\$ 169	\$ 169
Max	\$ 4,914,519	\$ 3,250,869	\$ 786	\$ 1,182	\$ 1,182
Count	31	31	31	31	31

Wastewater Metrics from Rate Survey	Total Expenses per MGD Treated	Operating Expenses per MGD Treated	Operating Expenses per Retail Customer	Operating Revenues per retail customer	Total Revenues per retail customer
Nashville, TN	\$ 662,988	\$ 291,044	\$ 251	\$ 567	\$ 641
Average	\$ 1,009,576	\$ 587,253	\$ 366	\$ 605	\$ 692
Median	\$ 867,831	\$ 488,407	\$ 316	\$ 549	\$ 658
Min	\$ 162,388	\$ 145,577	\$ 143	\$ 173	\$ 186
Max	\$ 2,158,178	\$ 1,202,805	\$ 1,531	\$ 2,153	\$ 2,437
Count	30	30	30	30	30

MWS compares favorably on both the water and wastewater side, with all metrics below the averages for the comparison group, particularly for operating expenses. Total expense metrics for the MWS water and wastewater utilities, while still well below the average, are not as favorable as for operating expenses alone. Looked at another way, total expenses per MGD are approximately twice as high (2.28 times) as operating expenses per MGD for MWS, whereas, when you look at the whole comparison group, the average value for total expenses per MGD for water is approximately 1.53 times the average value for operating expenses per MGD. For wastewater, this ratio of total expenses to operating expenses is approximately 1.72 times the average value for operating expenses per MGD. The implication is that MWS operating expenses make up a smaller portion of total expenses than the average for the comparison group, and conversely, non-operating expenses are proportionally higher for MWS, compared to the average for the comparison group.

Higher total expenses, relative to operating expenses, compared to other utilities, could be produced by a number of factors. For example, higher total expenses could be indicative of high indirect and overhead costs that may not be captured in operating expenses, and/or higher debt service costs. Based on fiscal year 2005 data, MWS total costs included a payment in lieu of taxes ("PILOT") and payment to Metro based on a local cost allocation plan ("LOCAP"). The LOCAP payment (\$4,658,921), exclusive of the separate \$4.0 million PILOT, was roughly equivalent to 5.49% of MWS' total operating expenses for FY 2005. Indirect costs allocated to water and sewer utilities for general government services, either through a PILOT or other cost allocation methodology, typically range between 4% and 8% of total operating expenses. In addition to these indirect costs paid to Metro, MWS also incurs its own general administrative and overhead costs associated with engineering, customer service, information services, accounting and human resources functions. Depending on the type of organizational structure, other utilities may rely more heavily on the centralized government for some of these services, resulting in lower cost associated with internal overhead and administrative functions.

Also included in this group of metrics are two measures related to revenues: operating revenues per retail customer and total revenues per retail customer. For the water system, these revenue metrics are, again, well below the average, consistent with the expense

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metrics discussed above. For the wastewater system, revenues per customer are slightly below the average. One reason that the wastewater revenues are only slightly below the average is that MWS generates additional revenues from wholesale wastewater customers that would tend to inflate the level of revenues measured on a per retail wastewater customer basis.

4) Costs Relative to Full-time Equivalent Employees:

The Rate Survey database also captured information to calculate two measures of costs per full-time equivalent employee ("FTE"), expressed in terms of operating expenses and total expenses for water and wastewater, as shown below.

Water Metrics from Rate Survey	Total Expenses Per FTE	Operating Expenses per FTE
Nashville, TN	\$ 255,494	\$ 112,159
Average	\$ 294,953	\$ 189,768
Median	\$ 267,426	\$ 180,094
Min	\$ 100,000	\$ 79,217
Max	\$ 647,972	\$ 398,079
Count	31	31

Wastewater Metrics from Rate Survey	Total Expenses Per FTE	Operating Expenses per FTE
Nashville, TN	\$ 256,123	\$ 112,435
Average	\$ 316,898	\$ 188,085
Median	\$ 277,603	\$ 163,868
Min	\$ 107,995	\$ 72,521
Max	\$ 832,388	\$ 578,462
Count	30	30

Both total and operating expenses per FTE for MWS water and wastewater operations are below the average. This is consistent with the lower operating and total expenses for the MWS water and wastewater systems.

Conclusions:

In general, it is evident that MWS compares favorably to the average metrics in almost every category, based on the operational and financial data from the 2006 Rate Survey. Certain

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general conclusions can be drawn from these results related to the two key areas of debt capacity and the general level of both operating and total expenses.

- The projected capital needs provided by MWS staff at the time that the 2006 Rate Survey data was collected included infrastructure investments for wastewater to address solids handling and odor abatement needs, which totaled approximately \$180 million. As discussed above, this may explain, at least in part, why the metrics for the five-year CIP per MGD treated was higher than the average for wastewater. However, given that the metrics shown for MWS indicate that they are not highly leveraged, MWS had the debt capacity to finance these capital needs.
- Expenses for MWS, particularly operating expenses, are below the average as measured per MGD and per customer; which is an indication of cost effective and efficient operations. However, even though total expenses appear to be in line with or below the average, there is an indication that non-operating expenses are higher for MWS, as a percentage of total expenses, than the average for the comparison group. In addition, we have assumed that stormwater operating costs were included in the wastewater operating expenses information reported for MWS. Since it is likely that most, if not all, of the other utilities in the comparison group do not include stormwater costs as part of their water and sewer expenses, this suggests that MWS' relative position would have appeared even more favorable had the results been adjusted to exclude stormwater costs.

Metro Water Services Water and Wastewater Benchmarking Survey Water Comparison Group	
<u>City/County</u>	<u>Utility</u>
Portland, OR	Portland Water Bureau
Louisville, KY	Louisville Water Company
Milwaukee, WI	Milwaukee Water Works
Tulsa, OK	Tulsa Public Works Department
Tucson, AZ	Tucson, City of
Albuquerque, NM	Albuquerque Bernalillo County Water Utility Authority
Charlotte, NC	Charlotte-Mecklenburg Utilities
Mesa, AZ	Mesa Municipal Water Department, City of
Birmingham, AL	Birmingham Water Works Board
El Paso, TX	El Paso Water Utilities
Omaha, NE	Omaha Metropolitan Utilities District
Atlanta, GA	Atlanta Water Department
Perris, CA	Eastern Municipal Water District
Oklahoma City, OK	Oklahoma City, City of
Orlando, FL	Orlando Utilities Commission
Clifton, NJ	Passaic Valley Water Commission
Richmond, VA	Richmond, City of
Reno, NV	Truckee Meadows Water Authority
Tampa, FL	Tampa Water Department
Salt Lake City, UT	Salt Lake City Corporation Public Utilities
Nashville, TN	Metro Water Services
Henderson, NV	City of Henderson
Providence, RI	Providence Water Supply Board
Riverside, CA	Riverside Public Utilities
Scottsdale, AZ	Scottsdale, City of
Savannah, GA	Savannah, City of
Tacoma, WA	Tacoma Public Utilities, Water Division
Wichita, KS	Wichita Water & Sewer, City of
Orlando, FL	Orange County Utilities
Arlington, TX	Arlington Water Department
Little Rock, AK	Central Arkansas Water
Everett, WA	Everett Public Works Department
Plano, TX	Plano Water Department, City of
Charleston, SC	Commissioners of Public Works-Charleston, SC
Jefferson, LA	Jefferson Parish Water Department

Listed in order of total gallons of water sold, as reported in the survey.

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Metro Water Services Water and Wastewater Benchmarking Survey Wastewater Comparison Group	
<u>Type</u>	<u>Wastewater Utilities Used in Analysis</u>
Philadelphia, PA	Philadelphia Water Department
Los Angeles, CA	City of Los Angeles Bureau of Sanitation
Washington, DC	District of Columbia Water & Sewer Authority
Miami, FL	Miami-Dade Water and Sewer Department
Fountain Valley, CA	Orange County Sanitation District
Dallas, TX	Dallas Water Utilities
Laurel, MD	Washington Suburban Sanitary Commission
Phoenix, AZ	Phoenix Water Services Department
Nashville, TN	Metro Water Services
St. Louis, MO	Metropolitan Sewer District
Atlanta, GA	Atlanta Water Department
San Francisco, CA	San Francisco Public Utilities Commission
Kansas City, MO	Kansas City (MO) Water Services
Akron, OH	Akron Public, City of - Utilities Bureau
Charlotte, NC	Charlotte-Mecklenburg Utilities
Austin, TX	Austin Water Utility
Jacksonville, FL	JEA
Portland, OR	City of Portland Bureau of Environmental Services
Oakland, CA	East Bay Municipal Utility District
Baton Rouge, LA	City of Baton Rouge/Parish of East Baton Rouge
Marrietta, GA	Cobb County Water System
Tulsa, OK	Tulsa Public Works Department
Oklahoma City, OK	Oklahoma City, City of
Chattanooga, TN	City of Chattanooga Moccasin Bend WWTP
Richmond, VA	Richmond, City of
El Paso, TX	El Paso Water Utilities
Albuquerque, NM	Albuquerque Bernalillo County Water Utility Authority
Grand Rapids, MI	City of Grand Rapids Sanitary Sewer System
Orlando, FL	Orange County Utilities
Fort Wayne, IN	Fort Wayne Water Utilities
Utica, NY	Oneida County Sewer District
Arlington, TX	Arlington Water Department
Perris, CA	Eastern Municipal Water District
Independence, MO	Little Blue Valley Sewer District
Erie, PA	City of Erie Bureau of Sewers
Madison, WI	Madison Metropolitan Sewerage District
Mobile, AL	Mobile Area Water & Sewer System
Wichita, KS	Wichita Water & Sewer, City of
Springfield, MO	Springfield, Mo., City of

Listed in order of total gallons of wastewater treated, as reported in the survey.

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