

Exhibit No.:  
Issues: Water Use Normalization  
Witness: Jerry Scheible, P.E.  
Sponsoring Party: MO PSC Staff  
Type of Exhibit: Rebuttal Testimony  
Case No.: WR-2008-0311  
Date Testimony Prepared: September 30, 2008

**MISSOURI PUBLIC SERVICE COMMISSION**

**UTILITY OPERATIONS DIVISION**

**REBUTTAL TESTIMONY**

**OF**

**JERRY SCHEIBLE, P.E.**

**MISSOURI-AMERICAN WATER COMPANY**

**CASE NO. WR-2008-0311**

**Jefferson City, Missouri  
September 2008**

**BEFORE THE PUBLIC SERVICE COMMISSION**  
**OF THE STATE OF MISSOURI**

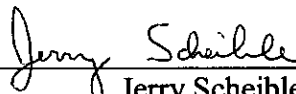
In the Matter of Missouri-American Water )  
Company's request for authority to )  
implement a general rate increase for )  
water and sewer service provided in )  
Missouri Service Areas )

Case No. WR-2008-0311

**AFFIDAVIT OF JERRY SCHEIBLE**

**STATE OF MISSOURI** )  
 ) ss  
**COUNTY OF COLE** )

Jerry Scheible, of lawful age, on his oath states: that he has participated in the preparation of the following Rebuttal Testimony in question and answer form, consisting of 5 pages of Rebuttal Testimony to be presented in the above case, that the answers in the following Rebuttal Testimony were given by him; that he has knowledge of the matters set forth in such answers; and that such matters are true to the best of his knowledge and belief.

  
\_\_\_\_\_  
Jerry Scheible

Subscribed and sworn to before me this 30<sup>th</sup> day of September, 2008.



SUSAN L. SUNDERMEYER  
My Commission Expires  
September 21, 2010  
Callaway County  
Commission #06942086

  
\_\_\_\_\_  
Notary Public



Rebuttal Testimony of  
Jerry Scheible

1 Q. What methods did the Company utilize to determine customer water usages?

2 A. The Company determined customer water usages for each service area based  
3 upon various prediction methods. The Company proposed both residential and commercial  
4 usages per customer for each of the nine service areas: Joplin, St. Charles, St. Joseph, St.  
5 Louis County, Brunswick, Mexico, Parkville, Warrensburg and Jefferson City. The St. Louis  
6 County service area includes usage numbers for two separate classes of commercial  
7 customers; monthly billed and quarterly billed. This resulted in the Company proposing  
8 water usages for a total of 19 individual customer types. Of those 19 customer types, the  
9 Company used the prediction method of weather normalization for five, a trend line  
10 regression for five, and a six-year average for nine.

11 Q. Which customer types did the Company implement the prediction method of  
12 weather normalization for?

13 A. The Company chose to perform weather normalization for only the four largest  
14 service areas, but ultimately did not recommend those results for all of the customer classes in  
15 those four. Weather normalized customer usage was recommended by the Company for St.  
16 Charles and St. Joseph residential customers, but not for the respective commercial customers.  
17 The Company's recommended customer usage for Joplin was based on weather normalization  
18 for commercial customers, but not residential. Only St. Louis County *quarterly* billed  
19 customer usage recommendations were based on weather normalization for both residential  
20 and commercial customers, but the Company's recommended usage for St. Louis County  
21 *monthly* billed commercial customers was based on a six-year average.

22 Q. Does Staff believe the Company's use of the prediction method of weather  
23 normalization to be the most reliable approach?

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1           A.       No. Staff obtained precipitation data from the National Oceanic and  
2   Atmospheric Administration (NOAA), for the four service areas the Company utilized  
3   weather normalization on. This data was then used to produce a graph for each service area,  
4   comparing the usage per customer per day (as provided by the Company in its work papers) to  
5   the correlating annual average precipitation. The period of comparison spans from 2000 to  
6   2007, but excludes data from 2003 and 2006, as the Company has deemed water usage data  
7   from those years to be unreliable due to billing software changes. The resulting graphs show  
8   that no consistent trend of correlation exists between customer usage and precipitation. The  
9   trend lines of the respective data would need to be the inverse of each other to prove that  
10   water usage increases as precipitation totals decrease, and vice-versa. The trend lines are  
11   erratic with no consistently predictable pattern, thereby disproving a reliable correlation  
12   between precipitation and customer water usage. (Those graphs were provided in Staff's  
13   response to Company Data Request 0188.) Staff also generated graphs, for residential  
14   customers of the four largest service areas, comparing monthly usage to monthly  
15   precipitation. The data spans the years of 2000 through 2007, excluding 2003 and 2006.  
16   (Schedules JS 1-1 through JS 1-4) These graphs show the lack of correlation between  
17   precipitation and customer usage on a monthly basis, reinforcing that shown by the analysis of  
18   annual data.

19           Q.       Does Staff believe the Company's use of the prediction method of trend line  
20   regression to be the most reliable approach?

21           A.       No. Although the utilization of trend line regression is generally a reasonable  
22   method of prediction, the Company did not include data from 2003 and 2006 in the regression  
23   analysis, for the same unreliability issues as mentioned above. The omission of the 2006 data

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1 amplifies any significant change in usage between 2005 and 2007, causing any predicted  
2 value to be skewed artificially high or low, accordingly.

3 Q. Does Staff believe the Company's use of the prediction method of a six-year  
4 average to be the most reliable approach?

5 A. Yes. Staff utilized the six-year average prediction method for all 19 individual  
6 customer types in its analysis of customer usage. Data from 2003 and 2006 were excluded  
7 from the analysis, as the Company has recommended.

8 Q. Why does Staff consider this prediction method to be the most reliable?

9 A. The averaging of actual usage, as provided by the Company, from the years of  
10 2000, 2001, 2002, 2004, 2005 and 2007, accounts for varying rainfall amounts and  
11 temperatures, in any given combination. Trends in water usage due to conservation practices  
12 or lawn size/irrigation practices are certainly unique to any given service area, and would also  
13 be accounted for in an average of actual usages. Neither the Company nor the Staff is  
14 attempting to recommend a usage based upon test-year data, which could potentially require  
15 adjustment for any affect due to "non-typical" weather during the test-year. Therefore, Staff  
16 believes utilizing an average of actual usage data for a recent time period is indeed the most  
17 reliable method of prediction.

18 Q. Is the precipitation that occurred during the years taken for the six-year  
19 average prediction method typical when compared to the average precipitation for a recent 30-  
20 year period?

21 A. Yes. Staff compiled monthly precipitation data from NOAA and averaged  
22 them for the six-year period of 2000 through 2006, and the 30-year period of 1976 through  
23 2006, for the St. Louis area. There is less than a 1% difference between the total

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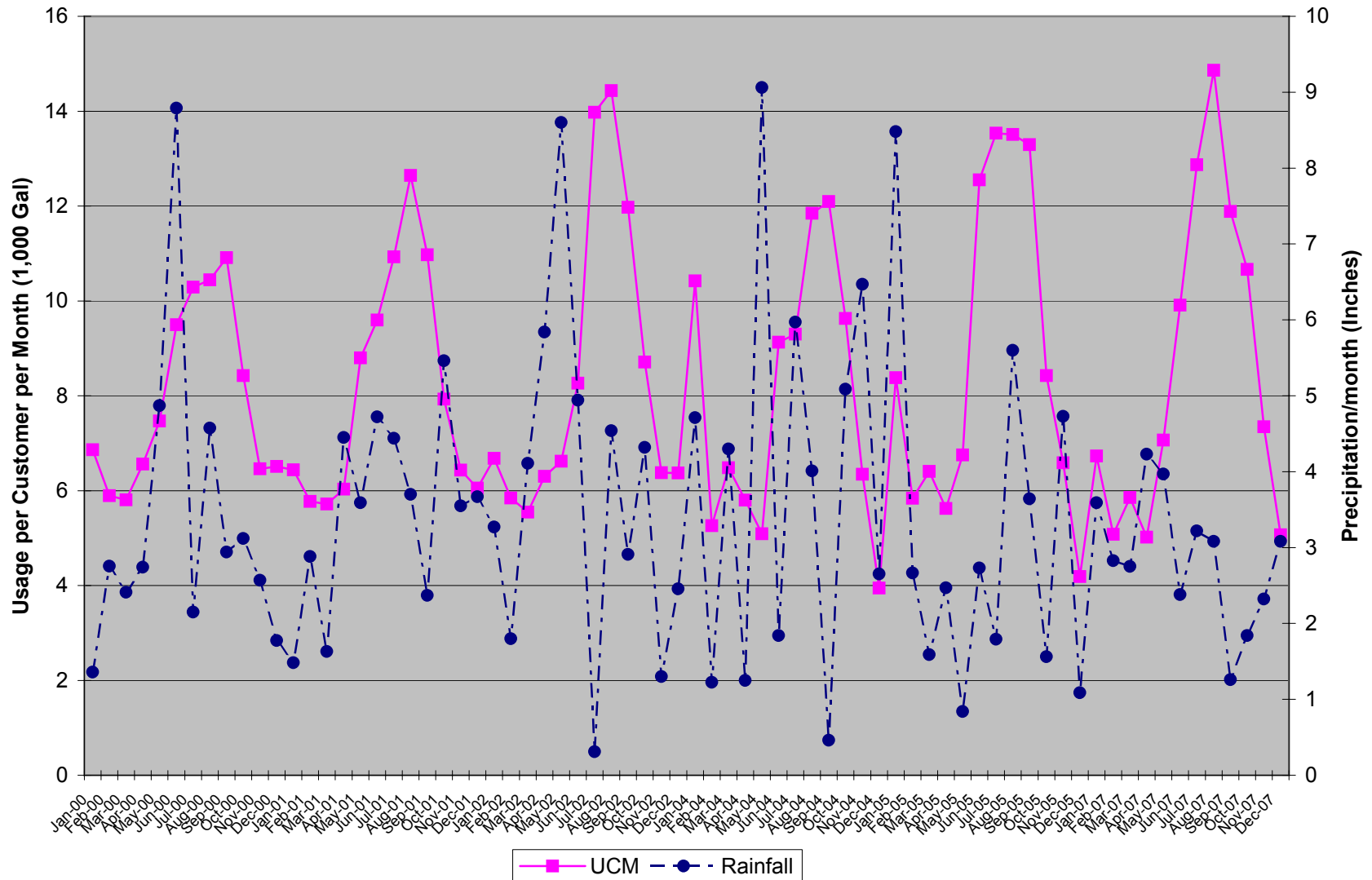
1 | precipitations for each of the time periods. A summary of the data is included in Schedule JS

2 | 2-1.

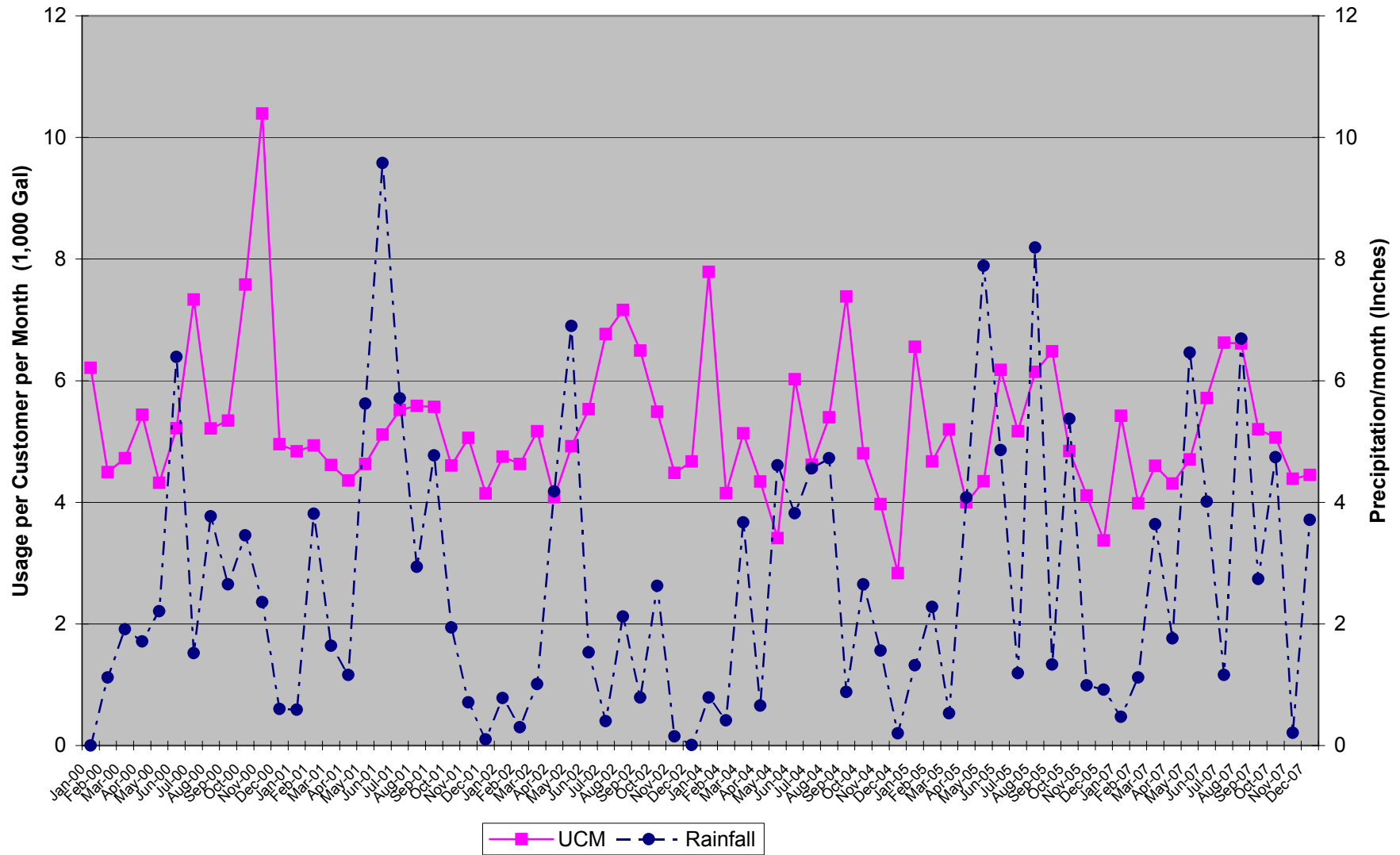
3 | Q. Does this conclude your rebuttal testimony?

4 | A. Yes.

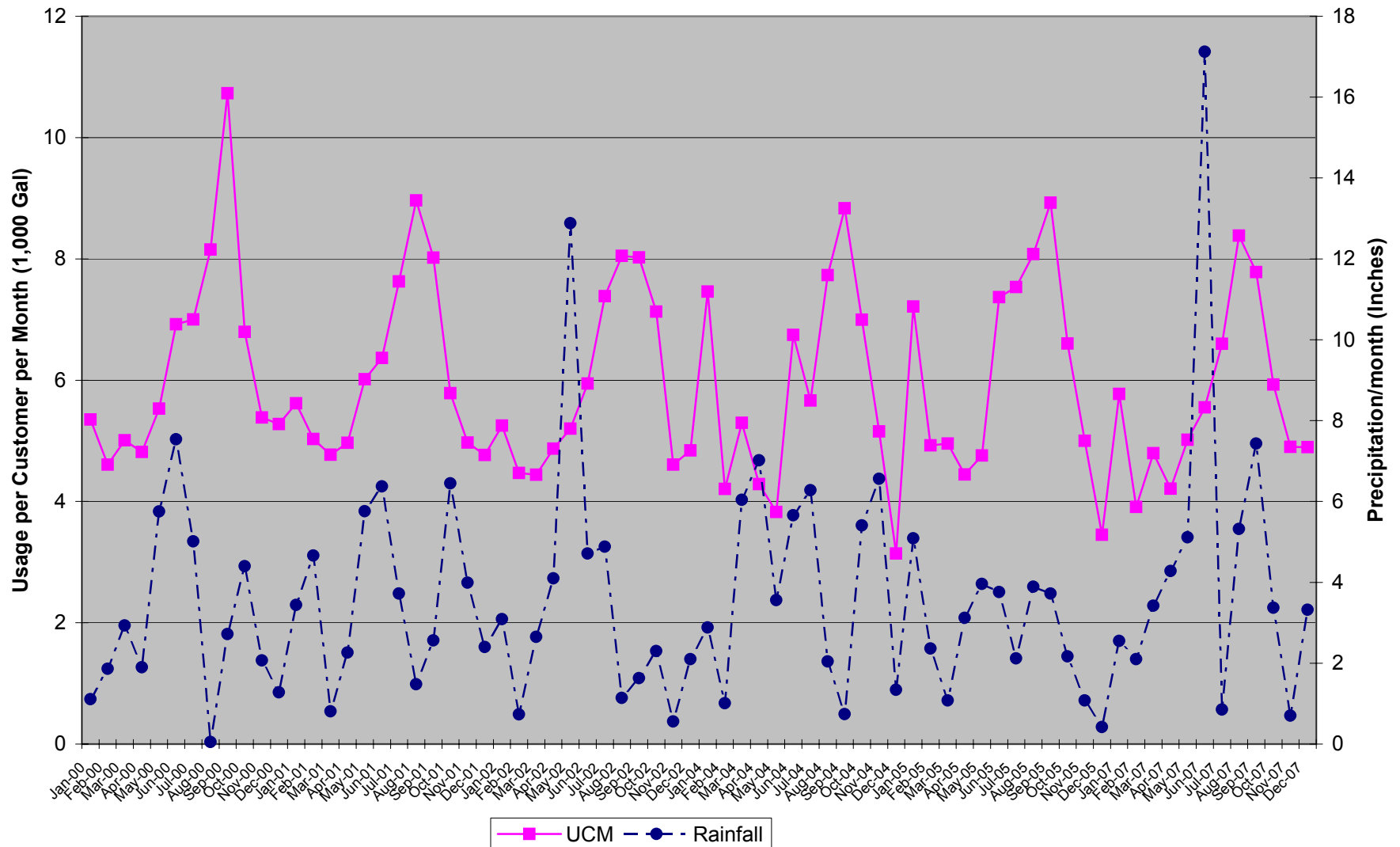
# Usage / Customer / Month vs. Precipitation: 2000 - 2007 x 03/06 St. Charles Residential



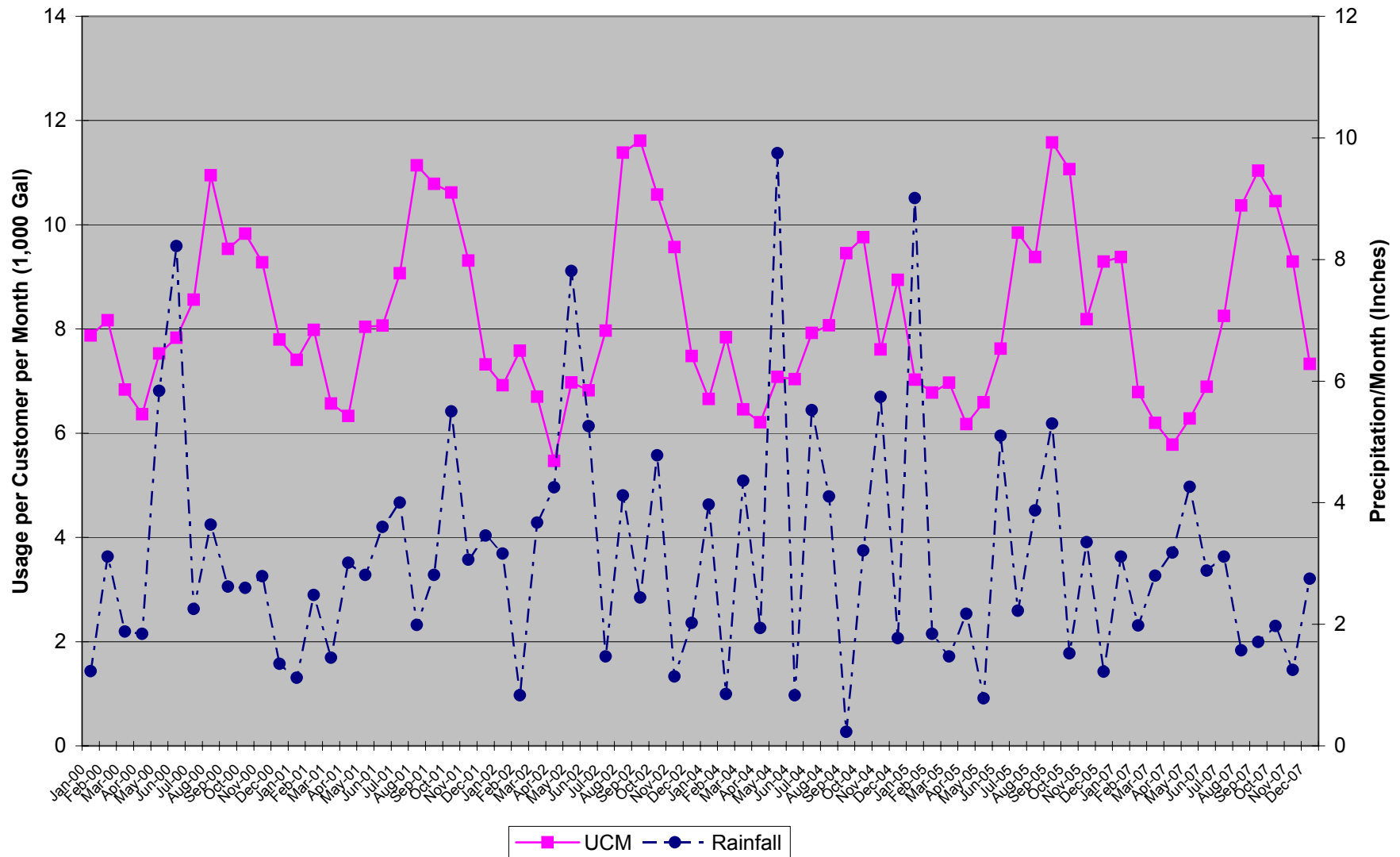
# Usage / Customer / Month vs. Precipitation: 2000 - 2007 x 03/06 St. Joseph Residential



Usage / Customer / Month vs. Precipitation: 2000 - 2007 x 03/06  
Joplin Residential



Usage / Customer / Month vs. Precipitation: 2000 - 2007 x 03/06  
St. Louis Residential (Quarterly Billed)



Precipitation averages for St. Louis, MO. Data from NOAA.

|               | Jan   | Feb   | Mar   | Apr   | May   | Jun   | Jul   | Aug   | Sep   | Oct   | Nov   | Dec   | Total  |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| 30 Yr Avg [1] | 2.431 | 2.148 | 3.334 | 3.788 | 4.381 | 4.133 | 3.976 | 2.943 | 2.933 | 3.05  | 3.775 | 2.706 | 39.598 |
| 6 Yr Avg [2]  | 4.042 | 1.5   | 3.02  | 3.166 | 5.314 | 5.284 | 2.966 | 3.24  | 2.766 | 2.858 | 3.364 | 2.468 | 39.988 |

Note:

[1] Data from 1976 to 2006.

[2] Data from 2000 to 2006.

% Difference 0.98%