



**Feasibility Report for Water Service
To
The City of Waukesha
May 1, 2012**

Introduction

This report is prepared in accordance with Resolution File 110438, “Resolution directing the Milwaukee Water Works, the Legislative Reference Bureau and the Department of City Development to prepare analyses relating to a proposed water service agreement and requesting submission of a report by the City of Waukesha”, which was adopted in October 2011. The Milwaukee Water Works (MWW) is directed to address these aspects of providing water to Waukesha: “increased revenue, cost of production, effect on the City’s water rates, impact on capacity utilization and any required capital costs, and other information the Water Works deems relevant to the Council’s consideration”.

Milwaukee Water Works’ Ability to Meet Water Service Request

Waukesha’s 2011 actual and 2035 and 2050 projected water use are presented in Table 1. below. These data were abstracted from Appendix A, “Waukesha Water Supply Service Area Water Demand Forecast” which was provided to Milwaukee Water Works by CH2M Hill on April 24, 2012.

Table 1. Waukesha’s water use projections (sources: “Application for Lake Michigan Water Supply”, dated May 20, 2010, 2011 Annual Report of Waukesha Water Utility to the Public Service Commission of Wisconsin, and data provided to Milwaukee Water Works by CH2M Hill on April 24, 2012.).

	2011 Actual	2035 Projected	2050 Projected
Total pumpage (million gallons per year)	2,519	3,650	3,979
Average day demand (million gallons per day)	6.9	10.0	10.9
Maximum day demand (million gallons per day)	11.6	16.8	18.5
Per capita water use (gallons per person per day)	Not specified	111	112

Considerations in assessing MWW's ability to meet Waukesha's water service request include water treatment capacity, water distribution capacity, and infrastructure available to connect the two water systems. The volume to be supplied and hydraulic grade line (pressure) available at connection point(s) are factors in this analysis. The service area to receive the water is not a factor because it is the facilities of Waukesha Water Utility (WWU) that deliver the water to the service area, not the facilities of MWW.

Treatment. MWW has excess capacity at its two water treatment plants. The Linnwood Plant and the Howard Avenue Plant have treatment capacities of 275 and 105 million gallons per day (mgd), respectively for a total of 308 mgd. In 2011, the average daily pumpage was 101 mgd and the maximum day pumpage was 144 mgd.

In Waukesha's application, the ultimate projected average daily demand is 10.9 mgd and the maximum day pumpage is 18.5 mgd.

There is sufficient treatment capacity to supply these additional projected water volumes. There are no improvements required to the MWW water treatment infrastructure to treat the additional projected volumes.

Distribution and Interconnection. Per the Waukesha Diversion Application dated May 2010, Waukesha "assumes connection to Milwaukee's water system at a large transmission main near 60th Street and Howard Avenue". The application describes fourteen miles of 36" diameter water main and a water pumping station. Additional information on the water supply route was verbally provided to MWW. The concept is for a feeder main to go west along Howard Avenue, north along the Root River Parkway to 124th Street and west in a WeEnergies utility corridor to a Waukesha Water Utility reservoir. The concept also includes a new pumping station along the route, possibly with associated underground water storage.

The application acknowledges the need for engineering studies to determine the specific requirements of the water supply infrastructure. Such a study would identify the optimal connection point and refine the proposed route and/or define an alternate route for the supply of water from Milwaukee to Waukesha. Considerations will include pressure district demands and pumping capacities, right sizing of MWW water mains to support the additional flows, and redundancies for a robust supply to WWU. All these factors must be evaluated to ensure that there will be no negative impacts on MWW's system. MWW would request that the engineering analysis include an assessment of whether the infrastructure improvement(s) for water supply to Waukesha might also provide a benefit to Milwaukee's system.

Milwaukee's existing wholesale customers have at least two connection points to the Milwaukee system to provide added reliability. However, WWU has considerable storage capacity and plans to keep their wells functional for emergency service. These factors may provide the desired level of reliability without the need for a second connection.

Milwaukee Water Works has a 54" water main at S. 60th Street and W. Howard Avenue that would provide more than sufficient capacity at that point to meet Waukesha's projected needs through 2050. There are other large water mains in the southwest part of the service area that could also be utilized for supply to Waukesha. Due to the elevation difference between Milwaukee and Waukesha, additional pumping capacity will be required. This additional capacity could be realized by construction of new pumping station(s) or improvements to MWW's existing Southwest District pumping station.

The selection of the pumping configuration to meet the supply needs will impact the determination of the physical point at which Milwaukee's ownership and/or operation of the infrastructure would end and Waukesha's would begin. The planned engineering study should address these interconnection and pumping options in the context of the overall supply plan.

It would be expected that new facilities constructed solely for the benefit of Waukesha would be paid 100% by Waukesha. If the engineering analyses showed that MWW also benefitted from new facilities, then appropriate cost-sharing should be considered.

Economic Impact on the Milwaukee Water Works

The financial operations of MWW are regulated by the Public Service Commission of Wisconsin (PSC), which sets water rates on the basis of full cost recovery plus a rate of return. Operation and maintenance expenses that MWW would incur relative to treatment and distribution of additional volumes of water for WWU would be fully recovered in the rates for water sold to WWU. These additional costs would include water treatment chemicals, increased facility maintenance, and electricity for pumping the water. (As previously discussed, it is anticipated that any infrastructure improvements necessary for the provision of water to Waukesha would be paid for by Waukesha, so would have no financial impact on MWW.)

Effective February 5, 2011, the PSC approved unique rate structures for each wholesale customer of MWW. It is not possible to know what rate structure would have been set for Waukesha. WWU's 2011 water use of 6.9 mgd corresponds to an annual water use of 2,519 mgd per year. This is 25% more than MWW's largest existing wholesale customer, West Allis. Applying West Allis' rate structure to WWU's volumes provides the closest approximation of revenue that would be generated. Using West Allis' rates, the estimated annual revenues are shown in Table 2.

Table 2. Estimated annual revenues from sale of water to Waukesha.

	2011 Use (actual)	2035 Use (projected)	2050 Use (projected)
Million Gallons per Day	6.9	10.0	10.9
Million Gallons per Year	2,519	3,650	3,979
Service Charge	\$ 25,848	\$ 25,848	\$ 25,848
Fire Protection Charge	\$ 145,392	\$ 145,392	\$ 145,392
Volumetric Charge	\$ 2,908,868	\$ 4,215,750	\$ 4,595,168
Total Annual Revenue	\$ 3,054,260	\$ 4,386,990	\$ 4,766,408

Additional water purchased by wholesale customers has a positive financial impact on MWW. This revenue directly lessens the rate burden of City of Milwaukee residents and businesses by spreading the utility's costs over a wider base. These non-Milwaukee ratepayers contribute to the MWW payment in lieu of taxes (PILOT) to the City of Milwaukee general fund, to the utility's payments to the general fund for services purchased from other City departments, to the utility's fixed costs, debt service, and Capital Improvement Program. Wholesale customers contribute proportionately more to MWW's revenue than retail customers by virtue of the PSC's February 2011 rate decision wherein a higher rate of return was approved for wholesale customers (6.5%) than retail customers (5.0%).

The precise amount of benefit to Milwaukee ratepayers is not easily calculated. The PSC has explained that the only way to accurately calculate the savings to Milwaukee customers would be to perform two complete rate case analyses, one with the revenues and associated costs accounted for, and the other without. This would require significant effort and expense and is not practical in the time frame available. However, MWW has developed three approaches to estimate the dollar benefit. These are described in Appendix B and summarized in Table 3.

Table 3. Annual benefit to Milwaukee ratepayers, estimated using 2011 rates.

	2011 Use 6.9 mgd (actual)	2035 Use 10.0 mgd (projected)	2050 10.9 mgd (projected)
Method 1	\$1.23	\$1.63	\$1.77
Method 2	\$14.49	\$19.15	\$20.75
Method 3	\$8.34	\$11.03	\$11.83

These methods provide estimates of between \$1.23 and \$14.49 per account per year for the first year of service. Future water usage increases by Waukesha, coupled with future MWW water rate increases would proportionately increase the amount of the benefit.

Summary

MWW has adequate treatment capacity to supply the additional water volumes projected by Waukesha. Water main alterations and, possibly, additions would be required to deliver treated water to an optimally located connection point for supply to Waukesha; additional booster pumping capacity is also required. Engineering studies are necessary to determine the specific requirements for Waukesha to connect to Milwaukee and ensure that there are no negative effects on Milwaukee's existing distribution system. The additional revenue that would be generated by selling water to Waukesha would have a positive financial impact on MWW.

Prepared by C. Lewis, Milwaukee Water Works, April 1, 2012 and revised May 1, 2012

Appendix A

Waukesha Water Supply Service Area Water Demand Forecast

Year	ADD	MDD	Year	ADD	MDD
2010	6.8	11.4	2030	9.9	16.6
2011	6.9	11.6	2031	9.9	16.6
2012	7.1	11.9	2032	9.9	16.7
2013	7.2	12.1	2033	10.0	16.7
2014	7.4	12.4	2034	10.0	16.8
2015	7.5	12.7	2035	10.0	16.8
2016	7.7	12.9	2036	10.1	16.9
2017	7.8	13.2	2037	10.1	17.0
2018	8.0	13.5	2038	10.2	17.1
2019	8.2	13.7	2039	10.2	17.2
2020	8.3	14.0	2040	10.3	17.3
2021	8.5	14.3	2041	10.4	17.4
2022	8.7	14.6	2042	10.4	17.5
2023	8.9	14.9	2043	10.5	17.6
2024	9.1	15.2	2044	10.5	17.7
2025	9.3	15.5	2045	10.6	17.8
2026	9.4	15.9	2046	10.7	17.9
2027	9.6	16.2	2047	10.7	18.0
2028	9.8	16.5	2048	10.8	18.1
2029	9.9	16.6	2049	10.8	18.2
			2050	10.9	18.3

Provided to Milwaukee Water Works by CH2M Hill, April 24, 2012

Appendix B

Methods for estimating benefit to City of Milwaukee ratepayers of increased revenue to Milwaukee Water Works (MWW) based on annual water sale to Waukesha of 2,519 million gallons and 161,536 ratepayer accounts (from 2011 PSC Annual Report).

Method 1:

Method 1 is based on principles of full cost of service ratemaking. The assumption is that the rate charged to Waukesha for water represents 100% of MWW's cost to treat and distribute that water, plus a 6.5% rate of return. Based on annual revenue of \$ 3,066,907, the 6.5% rate of return generates \$199,438, for an additional benefit to MWW ratepayers of \$1.23 per account per year.

Method 2:

Method 2 calculates the costs of electricity and chemicals for treating and pumping the water that would be sold to Waukesha and considers them as "incremental costs". The "incremental costs" are subtracted from the total revenue to derive an annual "net revenue" benefit. This method does not account for additional maintenance on or "wear and tear" of facilities due to the extra water being treated and delivered. The net revenue benefit is divided by the total number of accounts to yield the annual benefit per account. Using electricity and chemical costs from 2011, the incremental cost is \$2.3 million. Using this method, the benefit to Milwaukee ratepayers is calculated to be \$14.49 per account per year.

Method 3:

Method 3 assumes that the anticipated additional revenue from water sold to Waukesha would have reduced the revenue requirement in MWW's 2011 rate case, thus reducing the increase to customers. The revenue requirement identified by the PSC for the MWWs' 2011 rate case was \$13.7 million. This resulted in an increase of \$36.84 per year to the average single family residential customer that uses 15 Ccf per quarter. The basis of Method 3 is that a lower revenue requirement would translate to a proportionately lower increase to customers, thus would be a savings to customers. This method assumes that additional estimated revenue of \$3.1 million from Waukesha would have reduced the 2011 rate case revenue requirement to \$10.6 million, proportionately reducing the \$36.84 increase to customers to \$28.50, thereby saving the average residential customer \$8.34 per year.