

**MILWAUKEE WATER WORKS
DEPARTMENT OF PUBLIC WORKS
CITY OF MILWAUKEE**

**Feasibility Report for Additional Water Service
to
City of New Berlin
July 2008**

Introduction

Milwaukee Water Works has provided water service to the eastern third of the City of New Berlin, entirely within the Great Lakes basin, since July 2005. The City of New Berlin has requested water service be expanded to a larger service area. Milwaukee Common Council adopted Resolution File No. 071076 on December 11, 2007 authorizing Milwaukee Water Works to study and evaluate a water service request from the City of New Berlin to enlarge the approved water service area. The resolution directed that the resulting feasibility report be submitted to the Common Council and the Mayor. This report has been prepared in accord with this resolution.

City of New Berlin

The City of New Berlin is an existing wholesale customer of the Milwaukee Water Works. A contract was signed in June 2003 and the City of New Berlin began drawing water in July 2005. The area served is roughly the “eastern third” of the community, bounded on the west by the sub continental divide. The area is entirely within the Great Lakes basin. New Berlin paid for the infrastructure improvements necessary to connect the two water systems, including connections between the two distribution systems and constructing pumping stations. Water used and revenues generated by New Berlin are summarized in the following table:

	Revenue	Water sold (million gallons)
2005	\$234,381	240
2006	\$471,770	480
2007	\$556,132	504

The City of New Berlin’s request is to extend water service to include the “middle third” of the city as defined by the boundaries of the Milwaukee Metropolitan Sewerage District (MMSD) 2020 Facilities Plan. This area is outside the Great Lakes Basin but is within the MMSD service area; water is returned to Lake Michigan. The existing and proposed service areas are shown on the attached map.

The City of New Berlin has provided to Milwaukee Water Works the anticipated average day and maximum day demands through 2035 for the combined existing and proposed additional service areas. The projected average day demand ranges from 3.6 to 3.9 MGD, and the projected maximum day demand ranges from 5.9 to 6.3 MGD. The existing "Agreement Between the City of Milwaukee and the City of New Berlin for the Purchase of Water at Wholesale" provides for a maximum flow rate of 4.8 MGD.

Milwaukee Water Works Ability to Meet Water Service Request

Milwaukee Water Works has excess capacity at both of its two water treatment plant facilities. The Linnwood Plant and the Howard Avenue Plant currently have treatment capacities of 275 and 105 million gallons per day (MGD), respectively, for a combined treatment capacity of 380 MGD. In 2007, the average daily pumpage was 114 MGD and the maximum day pumpage was 166 MGD. There is sufficient treatment capacity to supply the additional proposed service area in New Berlin.

Treated water is distributed via three major pumping stations and nine additional booster stations. There are six pressure districts in the water service area. One of these districts is the Southwest Pressure District, which is generally located between West Oklahoma Avenue, West College Avenue, South 27th Street, and South 124th Street and includes portions of Milwaukee, Greenfield, Hales Corners and Franklin. Grange Pumping Station supplies the majority of water used in the Southwest District with minor supplement by the Oklahoma Pumping Station. There are two connection points from which water is supplied to New Berlin from Milwaukee. They are at South 124th Street and West Morgan Oaks Drive (in Greenfield) and at South 124th Street and West Grange Avenue (in Hales Corners). Both connection points take water from the Milwaukee Water Works Southwest Pressure District.

Milwaukee Water Works has identified and scheduled capital improvements to improve pressures and flows of water in the Southwest District. These projects are required for MWW to adequately serve the Southwest District and were developed independently of New Berlin's request to expand their service area. Planning for these improvements began in 2003 in response to a directive from the Wisconsin Department of Natural Resources to address areas of low pressure within the Southwest District. Preliminary engineering commenced in 2004. The Milwaukee Water Works' hydraulic model was used to evaluate the impact of these infrastructure improvements on flows and pressures at the connection points to New Berlin and throughout the Southwest District. The analysis indicates that after the identified infrastructure improvements are in place, a maximum flow rate of 6.50 MGD can be delivered to New Berlin.

The following projects are planned with the year of implementation estimated as noted. Timing of construction is contingent upon funding and coordination with the other needs of the Milwaukee Water Works and its operation. These estimated timelines are also impacted by the activities of others, including the State of Wisconsin's I-94 North South Corridor Project, which will impact a major feeder main serving the Grange Pumping Station.

The following projects are funded in the MWW 2008 Capital Improvement Program with construction anticipated in 2008 or 2009:

- W. Oklahoma Ave. from S. 98th St. to 150' West of S. 99th St.: Relay an 8" water main with a 12" main to increase capacity and reduce pressure losses
- W. Oklahoma Ave from S. 92nd St. to 130' East of S. 95th St.: Complete a gap in the distribution network by connecting two dead-end 12" water mains.
- W Cold Spring Rd. from S. 51st St. to S. 60th St.: Complete a gap in the distribution network and eliminate a dead-end water main by extending a 54" water main.
- W. Layton Ave. at S. 60th St.: Alteration to a 20" water main

The following projects are funded as part of the MWW 2008 Capital Improvement Program with construction anticipated in 2009:

- S 124th St. from W. Holmes Ave. to W. Edgerton Ave.: Complete a gap in the distribution network by connecting two dead-end 16" water mains.
- W. Edgerton Ave. at S. 60th St.: Alteration to a 20" water main
- W. Edgerton Ave. at W. Loomis Rd.: Alteration to a 20" water main
- W. Edgerton Ave. at S. 43rd St.: Alteration to a 20" water main
- S. 43rd St. at 625' South of W. Edgerton Ave. (Grange Pumping Station): Alterations to a 36" water main

The following project is funded as part of the MWW 2009 Capital Improvement Program with construction anticipated in 2009:

- W. Oklahoma Ave from S. 60th St. to S. 74th St.: New supply main from Riverside Pressure District to Oklahoma Booster Pumping Station.

The following projects are funded as part of the MWW 2009 Capital Improvement Program with construction anticipated in 2010:

- Oklahoma Booster Pumping Station: Pump upgrades to improve pumping capacities and reliability to the Southwest Pressure District.
- Grange Booster Pumping Station: Pump upgrades to allow increased flow and less pressure loss in the Southwest Pressure District.

The estimated total cost of these improvements is \$6,850,000.

Milwaukee Water Works Ability to Meet Demands in Excess of Water Service Request

Both the maximum flow rate able to be provided by Milwaukee Water Works and the anticipated water demands of the combined New Berlin service area are projections. The determination of Milwaukee's ability to provide a maximum rate of 6.50 MGD to New Berlin through the existing connection points is based on use of a hydraulic model. Actual testing in advance is not possible. It is Milwaukee's understanding that New Berlin's projections of anticipated water demands from present to 2035 are based on

calculations of increased water use due to future development of currently undeveloped parcels, and an anticipated overall water use reduction due to conservation measures.

The hydraulic model indicates that the rate of 6.50 MGD is the maximum instantaneous rate of flow that can be sustained without adversely impacting the Milwaukee distribution system and existing customers. There is no practical way to physically limit flow to this rate without potentially compromising public safety or emergency water supply. New Berlin has discussed that their storage and well supply can be used if the 6.50 MGD level is approached or exceeded. In such an event, Milwaukee could not compel New Berlin to operate their system to stay below the rate of 6.50 MGD. Therefore, Milwaukee Water Works has included in the water service agreement an additional payment for each hour or portion thereof that the instantaneous rate of 6.50 is exceeded. (The payment would be waived in the event of an emergency.) This is intended to be an incentive to New Berlin to use various storage and well pumping combinations as well as emphasize their conservation efforts. In addition, new contract language requires meetings at least every five years, more if requested by one of the parties, to reassess demands and related infrastructure needs. Milwaukee reserves the right to determine infrastructure improvement needs and to determine appropriate cost-sharing with New Berlin.

Economic Impact on Milwaukee Water Works

Based on an average day demand of 3.5 MGD, estimated annual revenues to Milwaukee Water Works for the combined existing and proposed service area are summarized in the following table:

Annual Revenue from Water Sales to New Berlin			
	Eastern Third		Middle Third
	2007 (actual*)	2008 (estimated)	First full year of service (estimated)
Service Charge*	115,530	231,060	429,600
Fire Protection*	25,710	51,420	102,840
Water Sold	419,182	461,854	434,000
Total	\$530,422	\$744,334	\$966,440

*2007 revenues represent 6 months of water sold at a composite volumetric rate (which included Service Charge plus Fire Protection Charge plus water sold) established in the original contract. On June 1, 2007, the new rate tariff took effect in which Service Charges, Fire Protection, and water sold were broken out by the Public Service Commission of Wisconsin.

The Service Charge and Fire Protection Charge were discussed with Rate Analysts at the Public Service Commission of Wisconsin, and they thought that setting those charges at levels equal to those of Menomonee Falls would be appropriate. This was because the anticipated volume of water to be used by New Berlin (1.3 billion gallons annually) is quite similar to that used by Menomonee Falls in 2007 (1.2 billion gallons).

The commodity charge is the result of 3.5 MGD multiplied by 365 days per year multiplied by the wholesale rate of \$0.668 per 1,000 gallons.

There are no incremental improvements required to the Milwaukee Water Works infrastructure to provide a maximum flow rate of up to 6.5 MGD to New Berlin. Therefore, there is no corresponding "additional cost" attributable to New Berlin for the provision of this water up to this maximum flow rate.

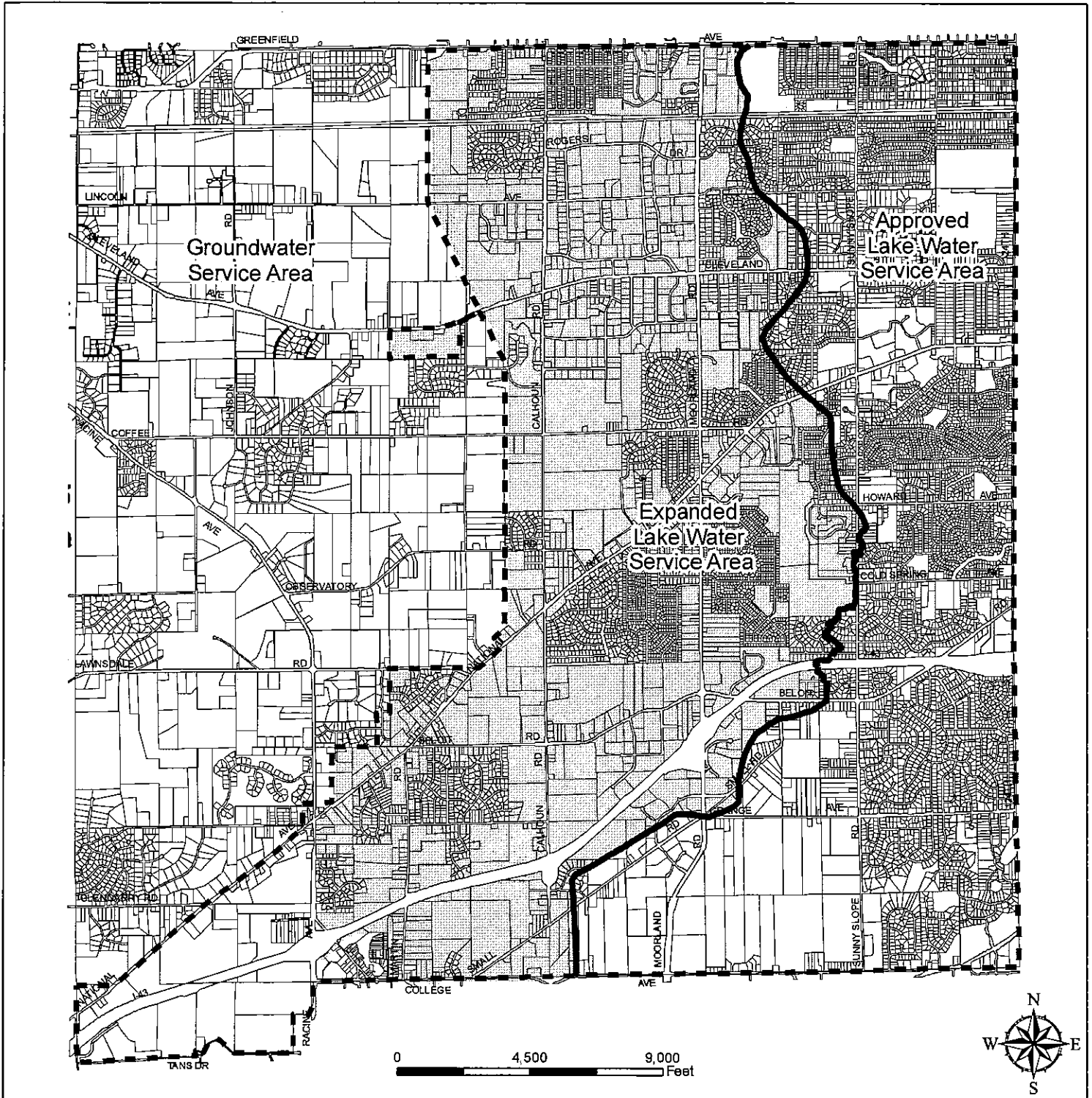
Additional water purchased by New Berlin has a positive financial impact on Milwaukee Water Works. This revenue directly lessens City of Milwaukee residents' rate burden by spreading the utility's costs over a wider base. These non-Milwaukee ratepayers contribute to the Milwaukee Water Works' payment 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. All additional revenue helps stabilize our modest rate of return currently and into the future.



The precise amount of benefit to Milwaukee ratepayers is not easily calculated. The Public Service Commission of Wisconsin 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. However, there are two ways that the Milwaukee Water Works has developed to estimate the dollar benefit, which are described in Appendix B. These methods provide estimates of between \$1.60 and \$4.50 per residential account per year, every year. Future water rate increases would proportionately increase the amount of the benefit.

Conclusion

Upon completion of the planned infrastructure improvements that the Milwaukee Water Works has planned for its current distribution system, the Milwaukee Water Works will have supply, treatment and distribution system capacity to serve the projected maximum flow rate of the entire requested service area of New Berlin. Additional infrastructure improvements will be required at New Berlin's cost if the demands exceed the projected maximum flow rate of 6.50 MGD. The additional New Berlin revenue and addition to the customer base will have a positive economic result for Milwaukee Water Works.

Appendix A



Approved Lake Water Service Area  2020 MMSD Planning Area
 Expanded Lake Water Service Area  Subcontinental Divide
 Area to Remain on Groundwater



City of New Berlin Community Development
 3805 S Casper Drive, New Berlin WI 53161
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APPENDIX B

Method for estimating benefit to City of Milwaukee ratepayers of increased revenue to Milwaukee Water Works

Method 1:

This method calculates the costs of electricity and chemicals for treating and pumping the additional water that would be sold to New Berlin and subtracts those costs from the projected 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 2007, the annual benefit per account from revenue generated from the "middle third" of New Berlin is calculated to be \$4.50.

Method 2:

This method assumes that the anticipated additional revenue from water sold in the "middle third" of New Berlin would have reduced the 2007 rate increase by a proportionate amount. The revenue requirement identified by the Public Service Commission of Wisconsin for the Water Works' 2007 rate case was \$4.0 million. This method assumes that the additional estimated revenue of \$855,370 from the "middle third" of New Berlin would have reduced the revenue requirement by 21% to \$3.1 million. The calculation assumes that the 6% rate increase that satisfied the \$4.0 million revenue requirement would have been reduced to 4.7%, saving the average residential customer \$1.60 per year.