2015 ANNUAL REPORT OF WATER USE, WATER DIVERSION AND RETURN FLOW FOR THE CITY OF NEW BERLIN, WISCONSIN

CITY OF NEW BERLIN
WAUKESHA COUNTY, WISCONSIN

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Prepared By: City of New Berlin Utility
3805 S Casper Drive
New Berlin, Wisconsin 53151

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2015 ANNUAL REPORT OF WATER USE, WATER DIVERSION AND RETURN FLOW FOR THE CITY OF NEW BERLIN, WISCONSIN

INTRODUCTION

The information contained in this document provides the needed data and related explanations of the data required to satisfy the conditions of the WATER SUPPLY SERVICE AREA PLAN AND DIVERSION APPROVAL issued by the Wisconsin Department of Natural Resources (DNR) dated May 21, 2009. In particular, the data and explanations report the following information for calendar year 2015 for the City of New Berlin (CITY):

1. The total amount of water purchased from Milwaukee on a monthly basis. Note: All water used by New Berlin Utility customers is purchased from the City of Milwaukee. **ALL City of New Berlin Wells are out of service.**
2. The amount of water sold to each category and the subcategory of customer on a quarterly basis within the City limits.
3. The amount of water sold to each category and the subcategory of customer on a quarterly basis within the approved diversion area.
4. Average residential per capita use.
5. There is currently NO water pumped from City of New Berlin wells. All wells are out of service.
6. Average residential per capita use.
7. A description of the efforts made by the City to improve water conservation and efficiency and minimize the infiltration and inflow into the sanitary system.
8. Estimates of the total monthly sewerage flow within the City.
9. Estimates of the monthly sewerage return flow from within the approved water supply service area and approved diversion area.

The information is presented in 9 sections with titles identical to those above. Data is presented in a tabular format preceded by explanation of each table, how the data was obtained and how the data was interpreted using estimating techniques, engineering judgment and data analysis. Table titles first contain the section number they refer to then the number of the table.

SECTION 1 - THE TOTAL AMOUNT OF WATER PURCHASED FROM THE CITY OF MILWAUKEE

The City of Milwaukee provides all of the water used by the CITY. In 2009, the CITY still used groundwater until July for some of their water needs. In July 2009, the improvements needed to allow the entire CITY to be served with Lake Michigan water via the City of Milwaukee were completed, thus allowing for discontinuance of groundwater supplies. These projects were completed following the Diversion Approval. All City of New Berlin groundwater wells are abandoned. (Appendix E – pgs 1-6)

Table 1-1 provides the "Total Amount of Water Purchased from the City of Milwaukee" as measured by Milwaukee and billed to the CITY. Table 1-1 contains 4 columns, the first listing the month, the second representing the cubic feet of water purchased and the third the number of gallons purchased from the City of Milwaukee and the average daily use. All of these totals are determined by the amount of water purchased (and measured) from the City of Milwaukee Water Works. Note: Milwaukee water had an inaccurate meter in 2014.

SECTION 2 - THE AMOUNT OF WATER SOLD TO EACH CATEGORY AND SUBCATEGORY OF CUSTOMER ON A QUARTERLY BASIS WITHIN THE CITY LIMITS

The CITY records and reports all water sold in a report to the Wisconsin Public Service Commission (PSC) by customer class each year. The four customer classes are Residential, Commercial, Industrial and Public. The CITY can further break these water sales records down by geographic location east and west of the sub continental divide and by residential units comprised of condominiums and apartments that are tracked as commercial establishments. Table 2-1 provides a breakdown of these water sales on a quarterly basis for the entire City and by the standard PSC customer classes and the subcategories tracked by the CITY.

SECTION 3 - THE AMOUNT OF WATER SOLD TO EACH CATEGORY AND SUBCATEGORY OF CUSTOMER ON A QUARTERLY BASIS WITHIN THE APPROVED DIVERSION AREA

Table 3-1 reports only water used in the Mississippi river basin on a quarterly basis and also provides a breakdown of residential use by condominiums and apartments in the Mississippi Basin.

SECTION 4 - THE AMOUNT OF WATER DIVERTED TO THE APPROVED DIVERSION AREA ON A MONTHLY BASIS (TO BE ESTIMATED BY THE CITY)

Table 4-1 provides the estimates of the diversion amounts. The estimates are based upon actual percentages of total water use determined by applying an average factor of 57.3 percent groundwater pumpage and 42.7 percent Lake Michigan water usage in 2009. This approximates the water use patterns where the groundwater pumpage was Mississippi River basin pumpage and the Lake Michigan pumping stations was Great Lakes basin pumpage. For the year, the total usage was multiplied by .573 to estimate the diverted amount. The CITY previously maximized the area where Lake Michigan Water was provided to customers so this method provides a reliable estimate of diverted water pumpage.

SECTION 5 - THE AMOUNT OF WATER PUMPED FROM EACH MUNICIPAL WELL WITHIN THE CITY LIMITS ON A QUARTERLY BASIS, NOTING THE BASIN IN WHICH EACH WELL IS LOCATED

Table 5-1 provides a list of all City of New Berlin wells were disconnected in 2009 per the DNR after the diversion request was approved. All City of New Berlin groundwater wells have been abandoned. (Appendix E – pages 1-6)

SECTION 6 – AVERAGE RESIDENTIAL PER CAPITA USE

Table 6-1 provides a calculation of average residential per capita use. That calculation shows residential per capita use to be 57.63 gallons per capita per day City wide. The calculation takes into account single family residential, condominium residential, and apartment residential and also breaks the information down by basin. The per capita residency occupation rate of 2.65 is 2015 is from the MMSD Operating Manual. The calculation method used in Table 6-1 to determine the population served by the water system has been added at the bottom of the page. Information from the MMSD Cost Recovery Manual is found in Appendix E, pages 33-35..

SECTION 7 – A DESCRIPTION OF THE EFFORTS MADE BY THE CITY TO IMPROVE WATER CONSERVATION AND EFFICIENCY AND MINIMIZE INFILTRATION AND INFLOW TO THE SANITARY SEWER SYSTEM

Water Conservation

The CITY adopted a Water Conservation Plan on December 8, 2009. A copy of the plan is attached to this document in appendix A and includes the revisions made in 2013. The Plan has six distinct goals to promote water conservation.

- Reduce per capita residential water consumption from January 1, 2008 by not less than ten (10) percent by the year 2020 for utility customers as per an agreement between the City of New Berlin and the Wisconsin Department of Natural resources (WDNR).
- Enable the City to meet future needs of our growing population.
- Protect Ground and Surface water supplies from unsustainable depletion. Since acquiring Milwaukee water, the Utility was able to reduce hydrant flushing to once per year. This practice alone has saved substantial water each year (Appendix E – page 7).
- Eliminate unnecessary waste in water use practices. The Water Conservation Plan provides the necessary authority to limit lawn sprinkling on an odd/even day and time of day schedule. The dry conditions during summer in 2012 prompted a Press Release limiting water sprinkling (Appendix E - page 8). The summer of 2015 provided adequate rainfall to assist our water conservation efforts. The Utility posts information on the website, newsletter and Utility bill in an effort to educate customers in water conservation measures (Appendix E – page 9)
- Reduce wastewater treatment volume and associated municipal expenditures.

- Promote the increased use of harvested and recycled water for irrigation needs through the use of cisterns where appropriate for commercial and industrial development. The City has had a Rain Garden display at the recycling center for several years. This display includes a working rain barrel. Information on the various native plants, where to obtain rain barrels and lists of classes are included on the City's website (http://www.newberlin.org/index.aspx?nid=422). The Water Resources Management Utility has also used rain gardens and bioretention in several of their projects (Appendix E - page 10-12)

Specific accomplishments include the preparation of the plan near the end of the reporting year. That plan includes a savings projected of 9.4 million gallons of water per year by not using water softeners in the diversion area and a savings of 8.7 million gallons by reducing hydrant flushing from twice per year to once per year for a total estimated annual savings of 18.1 million gallons. Hydrant flushing is performed in spring and fall. Every other hydrant is flushed in spring and the remaining ones in the fall. This ensures that each hydrant is flushed annually on a scheduled basis for maximum efficiency. The CITY also adopted sprinkling restrictions for residents to follow year round. Per capita residential water use decreased city wide from 68.03 in 2007 down to 57.63 in 2015. Adequate rainfall this summer assisted water conservation efforts. (Appendix E – page 36A)

Beginning in April of 2010, the CITY has a toilet rebate program designed to provide incentives for utility customers to abandon 5 gallon per use toilets and install a water sense 1.3 gallon per flush toilets. The amount of the rebate is $100 per toilet.

Toilet Replacements By Year	
2010	78
2011	45
2012	12
2013	6
2014	7
2015	10

The PSC approved the program to continue in 2015. (For Examples of reduced water consumption after low flow toilet installation, Appendix E - pages 13-18)The Utility also performed 90 leak detection tests in 2016 and provides this service free of charge to utility customers. In addition, the Badger Meter RTR/Neptune meter system that we now use can verify whether a customer has a leak. This allows us to notify the customer to set up an appointment to perform a free leak inspection to help reduce the amount of water that is wasted. (Appendix E – page 37)

In 2013 the Utility began offering customers free toilet leak dye tablets available at City Hall and the Library. This continued in 2015 and will be offered in 2016. The City's

website advertised the EPA's WaterSense "Fix A Leak Week" which gives tips on checking for and fixing leaks.(Appendix D)

The Utility has implemented the cross connection inspection program that was mandated by the DNR for commercial and industrial customers and has been inspecting residential customers since 2012 when meters are replaced or when answering a customer service call. In 2015 there were 870 residential inspections of which 865 were compliant, 5 rechecks for non-compliant in spring due to irrigation systems.(Appendix E - pages 19-22) The Utility began documenting if customers are operating water softeners or have removed or disconnected the unit. Since March 2012 Utility personnel that perform meter pulls have documented whether softeners have been disconnected or removed from residences. They have found over 90% of softeners were not in use. (Appendix E - page 23) In 2005 and also in 2009 when Milwaukee water was delivered to Utility customers on various sides of the continental divide, letters were sent to customers that provided information regarding the changes in water, including water hardness data and encouraged customers to disconnect their softeners. (Appendix E - pages 24-27) Based on estimates and an average softener regeneration of once a week, the average residential customer would save over 2,600 gallons per year. (Appendix E - pages 28-29). Because of variables such as weather, occupancy rates, economic conditions and the fact that meters are read quarterly in thousand gallon increments, it is difficult to provide an actual water savings realized in 2011 through disconnection of water softeners. Hydrant flushing water usage has reduced since we began this program. (Appendix E - page 7). A 5 Year Water Use Analysis is also listed (see Appendix E - pages 30-31)

The City of New Berlin began a member of the Alliance for Water Efficiency in 2013 and began using the AWE Tracking tool to monitor conservation efforts. The Utility teamed with the Energy Efficiency Program's Focus on Energy, sponsored by WE Energies to provide residential citizens with a no-cost energy savings program that provided high efficiency faucet aerators, showerheads, kitchen flip aerators, insulation of hot and cold water heater pipes and water heater temperature setback assistance. The results were impressive with 943 homes responding to the program for a total water savings of 5,772,429 gallons.

In 2015 Kaempfer and Associates conducted a new water study of the entire Utility area. The Utility has a 20 year project schedule to improve reliability and conservation.

The Utility repaired 13 water main breaks, performed 2 valve replacement and repairs and replaced 2 hydrants. During road projects the Utility had 3 hydrants and valves replaced and 3 main line valves replaced.

With the completion of the conservation plan and use of the CITY web site to provide public education on the need for water conservation, New Berlin is committed to continuing to educate the public. Along with the Water Conservation Plan, Utility personnel use a "Residential Demand Management Program" to monitor high consumption, show customers the amount of water caused by leaks, and provide informational material on water conservation. (Appendix E - page 32) Many studies

have shown the value of public education is an important component of water conservation efforts. The City's website contains educational information with kid's pages for water conservation activities and links to a drip calculator and other resource to provide helpful information to utility customers. The Utility also provides classes to schools and businesses and hands out coloring books and water usage wheels to promote water conservation and information on Water Smart Landscape Designs on the website (see Appendix D)

Infiltration and Inflow (I/I)

The City has an annual I/I program that has been in place since 1997. The City spent $260,547.00 in 2015 on I/I reduction. Table 7-1 lists the I/I reduction projects from 2015. The Utility has invested an average of $764,012 per year from 2000-2013 in I & I reduction. (Appendix B, page 6) Private I & I investigation and implementation began in 2013. In 2015 the Utility performed I & I Grant work city-wide.

Infiltration and Inflow (I/I) occurs in all sanitary sewerage systems. Infiltration refers to rainwater and groundwater that seeps into the system through defective pipes and joints. Inflow refers to storm water and surface water that enters the sewer directly. Both cause "clear water" to enter the system and increase treatment costs, cause sewer backups, bypassing and overflows.

Wastewater systems all have differing designs, construction, ages and are located in varying climates. With this in mind, there are not national standards for allowable I/I. Rather, EPA has required through the NPDES permit program that all wastewater overflows be eliminated. This requirement has prompted many sewerage systems to take active measures to reduce I/I. The MMSD is one of these.

MMSD addresses I/I reduction by placing limits on peak hourly flow rates. If a metered area exceeds the limits, I/I reduction is required. The requirements for these metered areas, also called "meter sheds" as listed in the MMSD 2035 Facility Plan are:

Sanitary Meter Shed Area (acres)	Maximum Allowable Peak Hourly Flow Rate (gallons per acre per day)
Less than 250	18,400
250 to 499	17,700
500 to 999	16,400
1,000 to 2,499	13,700
2,500 to 4,999	9,400
Greater than 5,000	4,000

Based upon the MMSD Facility Plan sewer flows for New Berlin, all areas of the City are currently in compliance with the above limits.

The City of New Berlin annually contracts with a consultant to monitor sewer flows during wet periods and prepare a report quantifying I/I. Preliminary results of the 2009

flow monitoring plan and analysis of flows by the city's consultant and 2010-2015 results are provided in Appendix C.

Precise quantification of I/I is impossible with today's technology. Area and velocity flow meters are used annually by the City to derive estimates of I/I by basin and sub-basin. These meters replace older style "level only" meters and are considered to be more accurate. Still, the environment in which they are placed has flooding, toxic gases, high levels of solids and other impairments which readily affect the meters performance. Data that is collected must be collated and suspect data discarded. The remaining reliable data is then professionally analyzed and reasonable professional estimates of I/I can then be made. This is the program used by New Berlin.

The most current estimates of I/I by the City's consultant indicate that total average daily sewer flows are 4.89 MGD. The attached email correspondence from the City and R.A. Smith indicates how they arrived at this figure. Using basin monitors this flow can be divided into flow east and west of the sub continental divide. This was determined by using all of the flow from basins 5 and 6 (Meter 5A) and 50 percent of the flow from basin 7 (Meter 7B). Based upon 2015 metered water use and estimates of sewerage flow the following average daily flows and I/I estimates can be derived:

		Water Pumpage	Sewer Flows	I/I
East of Divide	43%	1.19 MGD	3.012 MGD	1.822 MGD
West of Divide	57%	1.59 MGD	1.878 MGD	.288 MGD
Total		**2.78 MGD**	**4.89 MGD**	**2.11 MGD**

These are the most current and accurate estimates of I/I available for the City of New Berlin. These volumes change regularly and there will be differing estimates each year depending on a number of factors including groundwater levels and precipitation amounts and severity of precipitation events.

The City has spent over $20 million since 1997 on I/I reduction efforts. This includes all capital projects for manhole rehabilitation, studies and sanitary sewer replacement or relining. They received only 1 of 2 awards given by MMSD for their I/I reduction efforts in 2003. Listings of past projects are attached. Future projects will focus on higher I/I areas as identified by annual studies.

New Berlin ranks 5th out of 29 communities in expenditures for I/I reduction. This places them well ahead of many larger and older communities with more I/I.

It is important to realize that the I/I will occur and transmit some quantity of water across the basin divide. It is more important to realize that approval of the diversion has eliminated about 2.0 MGD of pumped water from outside the basin flowing into the basin on a daily basis. This, coupled with the strong commitment to reducing I/I by New Berlin, as evidenced above, absolutely minimizes the amount of water entering the basin from outside the basin.

Going forward, New Berlin proposes to monitor the amount of water used inside and outside the basin by customer water meter. Further, they propose to continue with the annual I/I quantification studies and will use the results of those studies to estimate I/I on both sides of the divide. This information will be available on an annual basis for the previous year.

SECTION 8 – ESTIMATES OF TOTAL MONTHLY SEWERAGE FLOW WITHIN THE CITY

Appendix C contains excerpts from an email provided by R.A. Smith to the City on Sewerage flows. These estimates were developed based upon metering performed by that firm and by MMSD during 2011-2015

SECTION 9 – ESTIMATES OF THE MONTHLY SEWERAGE RETURN FLOW FROM WITHIN THE APPROVED WATER SUPPLY SERVICE AREA AND DIVERSION AREA

Table 9-1 provided by R.A. Smith estimated flows both in the Great Lakes basin and Mississippi basin. The estimates assume all of basin 5 and 6 and 50 percent of basin 7 provide sewerage flows from the Mississippi Basin, and the remaining flow is from the Great Lakes Basin.

Table 1-1

Total Amount of Water Purchased From the City of Milwaukee
Annual Report of Water Use, Water Diversion and Return Flow - 2015
City of New Berlin, Wisconsin

Month	Cubic Feet	Monthly Total Amount of Water Purchased From The City of Milwaukee	Average Daily Usage (SCADA)
January	106,369	79,564,012	2,566,581
February	97,000	72,556,000	2,591,286
March	111,290	83,244,920	2,685,320
April	103,850	77,679,800	2,589,327
May	108,413	81,092,924	2,615,901
June	126,620	94,711,760	3,157,059
July	134,270	100,433,960	3,239,805
August	136,480	102087040	3,293,130
September	121,240	90687520	3,022,917
October	107,790	80,626,920	2,600,868
November	104,740	78,345,520	2,611,517
December	99,027	74,072,196	2,389,426
Total Annual Pumpage	1,357,089	1,015,102,572	2,780,261

Source: City of Milwaukee, Wisconsin Public Service Commission, and SCADA

Note: **ALL of water used by the City of New Berlin Utility customers in 2011 was purchased from the City of Milwaukee. New Berlin wells are no longer in service**

Average:	2.780	million gallons per day
	84,591,881	gallons per month
Highest Day:	August 6, 2015	4,429,000
Lowest Day:	November 27, 2015	2,208,000

Table 2-1

Amount of Water Sold to Each Category and Subcategory of Customer on a Quarterly Basis Within the City Limits - 2015

Annual Report of Water Use, Water Diversion and Return Flow - 2015

City of New Berlin, Wisconsin

	Major Category (Gallons Sold in Thousands)				
	Residential	Commercial	Industrial	Public	Total
1st Quarter 2015	105,160	81,683	15,478	2,215	204,536
2nd Quarter 2015	90,668	75,151	15,767	2,236	183,822
3rd Quarter 2015	141,273	96,742	16,766	4,321	259,102
4th Quarter 2015	101,873	80,997	15,926	3,277	202,073
Total	438,974	334,573	63,937	12,049	849,533

	Residential Subcategory (Gallons Sold in Thousands)		
	Great Lakes Basin	Mississippi Basin	Totals
1st Quarter 2015	69,657	35,503	105,160
2nd Quarter 2015	60,393	30,275	90,668
3rd Quarter 2015	95,516	45,757	141,273
4th Quarter 2015	68,871	33,002	101,873
Total	294,437	144,537	438,974

	Condominium and Apartment Subcategory of Commercial Category (Gallons Sold in Thousands)		
	Great Lakes Basin	Mississippi Basin	Totals
1st Quarter 2015	17,681	22,072	39,753
2nd Quarter 2015	15,725	19,878	35,603
3rd Quarter 2015	19,231	26,536	45,767
4th Quarter 2015	16,452	22,381	38,833
Total	69,089	90,867	159,956

Source: City of New Berlin, Wisconsin

Table 3-1

Amount of Water Sold to Each Category and Subcategory of Customer on a Quarterly Basis Within the Approved Diversion Area - 2015
Annual Report of Water Use, Water Diversion and Return Flow - 2015
City of New Berlin, Wisconsin

	Major Category Mississippi Basin (Gallons Sold in Thousands)				
	Residential	Commercial	Industrial	Public	Total
1st Quarter 2015	35,503	53,176	15,478	1,674	105,831
2nd Quarter 2015	30,275	48,797	15,767	1,675	96,514
3rd Quarter 2015	45,757	67,411	16,766	3,924	133,858
4th Quarter 2015	33,002	56,077	15,926	2,738	107,743
Total	144,537	225,461	63,937	10,011	443,946

Condominium and Apartment Subcategory of Commercial (Gallons Sold in Thousands)	
	Mississippi Basin
1st Quarter 2015	22,072
2nd Quarter 2015	19,878
3rd Quarter 2015	26,536
4th Quarter 2015	22,381
Total	90,867

Source: City of New Berlin, Wisconsin

Table 4-1

Amount of Water Diverted to the Approved Diversion Area on a Monthly Basis
Annual Report of Water Use, Water Diversion and Return Flow - 2015
City of New Berlin, Wisconsin

Month	Estimated Amount Diverted in Gallons
January	45,590,179
February	41,574,588
March	47,699,339
April	44,510,525
May	46,466,246
June	54,269,839
July	57,548,659
August	58,495,874
September	51,963,949
October	46,199,242
November	44,891,983
December	42,443,368
Total	581,653,791

Source: City of New Berlin, Wisconsin and Ruekert & Mielke, inc.

Table 5-1

All water provided to City of New Berlin Utility customers are serviced by City of Milwaukee water.
There are NO New Berlin ground water wells in service.

We have abandoned wells 1, 2, 3, 4, 5, 7, 8, 9, 10 and 11
All wells were disconnected when we received permission for our diversion request and all water is provided by Milwaukee Water.

Table 6-1

Average Residential Per Capita Use
Annual Report of Water Use, Water Diversion and Return Flow - 2015
City of New Berlin, Wisconsin

		2015 Quarter (Use in Thousands)						Average Residential Per capita Use in Gallons per Day
		1st	2nd	3rd	4th	Total	Population	
Basin	Cust Class	Cons	Cons	Cons	Cons			
Great Lakes	C-CONDO/APT	17,681	15,725	19,231	16,452	69,089	3,402	
Great Lakes	R Residential	69,657	60,393	95,516	68,871	294,437	13,575	
	TOTALS					363,526	16,978	58.66
Mississippi	C-CONDO/APT	22,072	19,878	26,536	22,381	90,867	4,030	
Mississippi	R Residential	35,503	30,275	45,757	33,002	144,537	7,467	
	TOTALS					235,404	11,497	56.10
	Combined City Wide Residential Per Capita Water Use					598,930	28,475	57.63

Source: City of New Berlin, Milwaukee Metropolitan Sewerage District

Calculations: We took the average number of residential connections and multiplied it by the occupancy factor. Then, we broke down the number of bedrooms and multiplied that by the appropriate ocupancy factor and finally added the number of condos multiplied by their occupancy factors. We took the occupancy factors out of MMSD's Cost Recovery Manual. The calculation is complicated by two factors; 1) a significant portion of the city is not served by municipal water and 2) the PSC & DNR have different classification methods for residential customers specific to condo and apartment units. (See Table 6-1, P.2)

2015 Connections

		Q1	Q2	Q3	Q4			
Basin	Customer Class	Count	Count	Count	Count	Average	Occupancy Factor	Population
MILW	C-CONDO/APT	296	294	294	296			
MILW	R Residential	5121	5123	5122	5125	5,123	2.65	13,575
MISB	C-CONDO/APT	950	956	956	956			
MISB	R Residential	2815	2815	2820	2821	2,818	2.65	7,467

2015 Condo/Apartment Population Calculation

Basin		Bedroom	Units	Factor	Population	Total
MILW	Apartment	1	458	1.50	687	
MILW	Apartment	2	937	2.50	2,343	
MILW	Apartment	3	79	2.63	208	
MILW	Condo		110	1.50	165	3,402
MISB	Apartment	1	398	1.50	597	
MISB	Apartment	2	897	2.50	2,243	
MISB	Apartment	3	21	2.63	55	
MISB	Condo		757	1.50	1,136	4,030
						28,475

Factors are from MMSD Cost Recovery Manual

Table 7-1

Water Conservation Efforts and I/I Reduction Efforts
Annual Report of Water Use, Water Diversion and Return Flow - 2015

City of New Berlin, Wisconsin

Year	Project Title	Work Involved	Project Expenditures
2009	Glendale Road	Sewer Rehabilitation, Relining and Manhole Repairs to Reduce I/I	$711,000
2009	Deer Creek Interceptor	Sewer Rehabilitation, Relining and Manhole Repairs to Reduce I/I	$247,945
2010	Various Areas	Sewer Rehabilitation, Relining and Manhole Repairs to Reduce I/I	$352,785
2011	Greenridge/various	Sewer Rehabilitation, Relining and Manhole Repairs to Reduce I/I	$283,000
2012	124th & Greenfield	Relay Section of sewer main, Relining and Manhole Repairs to Reduce I/I	$73,000
2013	Various Areas	Dye Testing/Leak Inspection for PPI/I	$460,000
2013	Citywide	Manhole Grouting (areas identified from dye testing results)	$2,400
2013	Citywide	Manhole Grouting (areas identified from dye testing results)	$36,056
2014	Citywide	Grant Work	$5,000
2015	Citywide	Manhole Grouting	$15,212
2015	Calhoun Road	Boot Installation	$846
2015	Various Areas	Dye Testing/Leak inspection for PPI/I	$233,258
	Total		$2,420,502

Source: City of New Berlin Utility Department

Table 8- 1 & 9-1

Estimates of the Monthly sewerage return Flow From Within the Approved Water Supply Service Area and approved Diversion Area

Annual Report of Water Use, Water Diversion and Return Flow - 2015

City of New Berlin, Wisconsin

Basin	Average Daily Flow (MGD)	Monthly (30-Day Flow Gallons)	Annual Flow (Gallons)
Great Lakes Basin	3.012	90,360,000	1,084,320,000
Mississippi River Basin	1.878	56,340,000	676,080,000
Total	4.89	146,700,000	1,760,400,000

Source: R.A. Smith and Milwaukee Metropolitan Sewerage District