

## 2012 WATER UTILITY BUDGET

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## City of Two Rivers Water Utility: AT A GLANCE

Water Supply Source:	Lake Michigan (Approx. 1-mile out at 30 foot depth)
Filtration Technology:	Ultrafiltration Membranes
Production Capacity:	3.0 million gallons per day (MGD)
Capacity Expandability:	3.3 MGD with addition of more filter racks
Chemicals Used:	Chlorine for disinfection residual Fluoride for prevention of tooth decay Sodium hydroxide for corrosion control (lead and copper) Activated carbon (when needed for odor control)
Average Daily Demand:	1.2 MGD
Peak Day in 2010:	1.837 MGD
Peak Day (past 5-years):	2.6 MGD
No. of Customers:	5,168 (as of November 2011)
Distribution System:	Approximately 70 miles of mains ranging from 4-inch to 12-inches in diameter
Elevated Storage:	South Side Tower: 500,000-gallon capacity (painted inside and out in 2008; drained, inspected and cleaned 2010) East Side Tower: 500,000-gallon capacity (painted inside and out in 2009; drained, inspected and cleaned 2011)
Underground Storage:	Bellevue Reservoir: 2,000,000-gallon capacity (drained and inspected October 2011, as required every 5 years by DNR)
Dist. System Valves:	940
Hydrants	614
Physical Plant:	Gross Value as of (12/21/2009): \$14,081,829 Net Value as of (12/31/2009): \$10,210,416

## FUND 650: WATER UTILITY

### Source and Filtration

The Water Utility draws raw water from Lake Michigan, a high quality surface water source, through an intake main extending approximately one mile into the lake. Water is filtered through a modern ultrafiltration facility that was completed in 2004. That state-of-the art filtration technology is housed in the historic filter plant buildings that formerly housed sand-and-gravel filter beds, used to filter the community's water supply from the 1920's until 2004.

The 2004 filtration plant upgrade, a \$4.2 million project, was financed with a twenty-year loan from the Wisconsin Department of Natural Resources (WDNR) Safe Drinking Water Loan Program, at an interest rate of 2.365 percent. Annual debt service on this loan is approximately \$280,000 and will continue through 2023.

The facility upgrade also included significant automation of plant operations. That automation allowed the City to move from 24 / 7 operator staffing to a single shift operation Monday-Friday with single operator coverage for four hours on Saturdays and Sundays. As a result of the automation, plant operators spend more time on equipment repair and maintenance than on "operation" of the facility.

### Distribution

Water is distributed to customers throughout the community by way of a system that includes high-pressure pumps, two elevated storage tanks, one ground storage reservoir and approximately 70 miles of water mains. Routine maintenance of the distribution includes inspection and maintenance of the elevated storage tanks and ground reservoir, exercising of valves, flushing of water mains, maintenance of hydrants and testing and replacement of customer meters.

### Rates

The Water Utility is an enterprise fund, with all operating costs supported by user fees. The utility is regulated by the Wisconsin Public Service Commission (WPSC), which must approve all rate changes. The WPSC allows the utility a *rate of return* on its asset base, which is intended to provide *retained earnings* that can be used by the utility to pay for non-operating expenses such as capital projects and debt service. (In Two Rivers' most recent rate filing, the WPSC authorized a 6.5 percent rate of return.)

Water rate increases in recent years included a **32 percent** increase that took effect January 1, 2004 in advance of the plant upgrade, a **25 percent** increase that took effect April 1, 2008 and a **27 percent** increase that took effect September 1, 2010.

Staff recommends that the City pursue a "simplified rate case" with the Public Service Commission in 2012. Such cases can be filed on-line, as long as at least one calendar year has passed since the effective date of the utility's last conventional rate increase.

Such “short form” rate filings allow water utilities to make modest adjustments in their rates on an annual basis (for up to five years following a conventional rate case) and help avoid the “sticker shock” resulting from less frequent rate filings.

As with the Electric and Sewer utilities, the Water Utility makes a *property tax equivalent* payment to the City. PSC regulations provide that this payment is calculated by multiplying the book value of the utility’s physical plant by the local tax rate. In light of recent major rate increases for water users, the City has opted to keep this payment frozen since 2004. The budgeted amount of this payment for 2012 is \$140,000. If the City were to “let the formula run,” this payment would be approximately \$225,000. Full funding of the payment would require a further rate increase of about three percent.

### **Billing, Customer Support and Finances**

The Finance Department’s Customer Service Office handles water utility accounting and billing services. A portion of the budget for that office is charged to this budget. Other “administrative overhead” departments, including City Council, City Manager, Legal and IS, are also allocated to this fund.

### **Filtration Plant and Distribution System Operation**

Operational staffing for the Water Utility has been reduced from 12 full-time positions in 2002 to 7.5 FTE in recent years.

During 2011, the utility has moved forward with a transition that involves cross-training all operations personnel in operation and maintenance of both the water filtration plant and the water distribution system.

With the expected retirement of a senior operator/maintenance worker in mid-2012, the budget calls for not filling that full-time position, but instead hiring two seasonal employees for the summer months to assist full-time staff with distribution system work like valve exercising and hydrant flushing (net savings of about \$25,000 annually).

The budget also calls for creating a new, full-time Secretary position in 2012, to be funded 90 percent from the Water Utility, 10 percent from the Sewer Utility. This position is needed to handle utility record-keeping and reporting activities, both for outside regulatory agencies and internal operations purposes. The addition of this support position will also allow the Water and Wastewater Superintendents to focus more of their time on operations and on new regulatory requirements in their respective areas.

## Highlights of the Proposed 2012 Budget

The 2012 Water Utility budget:

1. Continues to make very conservative assumptions about **revenues**, anticipating that the recent large rate increase will result in water conservation by residential users, and that recent years' downward trends in water usage by commercial and industrial customers will continue.

The 2011 Budget assumed an overall increase in revenues from water sales of 12.1 percent from 2010 to 2011, following the last big water rate increase (27 percent in September 2010). That projection proved accurate, as 2011 water sales are now estimated at 13.8 percent above 2010.

While residential water sales may increase somewhat further in 2012, as homeowners get over the "sticker shock" of a large rate increase, no such increase is assumed, due to the slow economy and always-variable weather conditions. (Summer weather conditions and the amount of watering done by homeowners can account for significant swings in residential water usage.) Commercial and industrial usage are also projected to stay flat.

2. Shows total **operating expenses** (including depreciation) of \$2,335,050, up \$50,000 or 2.2 percent over the 2011 budget. Major contributors to this increase are the budgeted allowances for distribution system repairs, where increases total \$100,000. "Other Services" line items are increased for:

- Maintenance of Mains, 650-59673-2900, up from \$30,000 to \$60,000, plus \$6,000 for leak detection. Aging mains can fail or develop major leaks, requiring excavation and repair of the underground facilities, followed by restoration of surface infrastructure. For the past two years, the utility has also contracted with a firm that does acoustical leak detection—major leaks have been located and repaired, helping reduce distribution system losses.

- Maintenance of Services, 650-59675-2900, up from \$10,000 to \$50,000. Whenever mains are replaced or repaired, old lead services (over 2,600 in the system) are replaced; leaking services are also replaced.

- Maintenance of Hydrants, 650-59677-2900, up from \$0 to \$30,000. Aging hydrants also develop leaks, or fail during system flushing or firefighting use, resulting in the need for repair or replacement.

During 2012, the City will need to address strategies for dealing with additional Department of Natural Resources mandates related to the water distribution system. It is the utility's responsibility to develop programs to inspect private properties for cross-connections between potable and non-potable water systems, to inspect and regulate private wells (like the many "sand points" in Two Rivers), and to inspect private plumbing systems to identify the presence of lead and copper plumbing.

The City continues to be responsible for lead and copper testing every third year—results for the most recent round of such testing (in 2011) were favorable, with only one sample in 30 exceeding EPA Safe Drinking Water Standards. Exceeding those standards in ten percent or more of such samples can result in enforcement action and expensive mandates by DNR.

The DNR's Regional Water Supply Engineer completed that agency's once-every-three years sanitary survey of Two Rivers' Water Utility in October 2011. Utility staff is in the process of preparing a written response to the recommendations/requirements set forth in report presented by the DNR in follow-up to that regulatory visit. The draft response will be reviewed with the City Council Utilities Committee, prior to submittal to DNR.

Major investment decisions to be made in the next 1-3 years include:

- Addressing overall "system losses" (unaccounted-for water usage) through more aggressive meter testing/replacement and system leak detection activities;
- Implementing an automated meter reading system for personnel cost savings, leak detection and improved customer service
- Various security improvements at water filtration, pumping and storage facilities

### **Capital Investment**

Capital spending by the Water Utility during 2012 is being kept to a minimum, due to the deficit condition of the utility (deficit of \$936,931 at the end of 2010). Proposed investment in capital plant totals \$282,700 and includes:

- \$120,000 to replace half of the valves and actuators for the filtration plant's filter racks; these valves and actuators are operated every time the plant goes "backwash" and cleaning cycles, to remove solids collected in the filter media. The original valves and actuators, now 8 years old, have not held up well; half were replaced in 2010 and replacement of the rest is proposed for 2012.
- \$40,000 for replacement of valves in the distribution system
- \$75,000 for water meter replacements and to initiate a cross-connection and plumbing inspection program
- \$8,200 for purchase and installation of a backup chlorine pump, required per DNR's latest sanitary survey
- \$15,000 for a new, truck-mounted valve turner (replacement item)
- \$24,500 to "buy out" the WPPI lease on the emergency generator that is intended to provide backup power for water plant operations

This budget **does not** address other needed distribution system investment, like replacement of aged and undersized water mains. More frequent water main breaks, upset customers, and escalating repair costs result from failing to reinvest in this infrastructure—this is a problem not only in Two Rivers, but in communities across the country.

## Water Department Staffing Summary

Water Utility - Full Time Position	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2002-12
												Net Change
Utilities Director	0.5	0.5	0.5	0	0	0	0	0	0	0	0	-0.5
Water/Wastewater Supt.	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0	0	0	-0.5
Water Superintendent	0	0	0	0	0	0	0	0	1	1	1	1
Secretary	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.9	0.4
Water Utility Service Foreman	1	1	1	1	1	1	1	1	1	1	1	0
Water Utility Service Workers	4	4	3	3	3	3	3	2	2	0	0	-4
Water Plant Operators	4	3	3	3	3	3	2	2	2	0	0	-4
Water Plant Mechanic	1	1	1	1	1	1	1	1	1	0	0	-1
Plant Ops/Dist. System Wkrs.										5	4	4
Seasonal Dist. Workers--2	0	0	0	0	0	0	0	0	0	0	0.7	0.7
Clerk III	0.5	0.5	0.5	0.5	0	0	0	0	0	0	0	-0.5
CAD Technician					0.5	0.5	0.5	0.5	0	0	0	0
<b>TOTAL</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>9.5</b>	<b>9.5</b>	<b>9.5</b>	<b>8.5</b>	<b>7.5</b>	<b>7.5</b>	<b>7.5</b>	<b>7.6</b>	<b>-4.4</b>

	Account Title	2010 Actual	2011 Budget	2011 Year To Date	2011 Projected	2012 Budget	Change from prior budget	% change from prior budget
<b>Revenues</b>								
	TOTAL MISC REVENUE	\$ 504,809	\$ 53,600	\$ 736	\$ 21,100	\$ 1,100	\$ (52,500)	-97.9%
	TOTAL SALES OF WATER	\$ 2,187,236	\$ 2,439,200	\$ 1,572,979	\$ 2,474,400	\$ 2,468,000	\$ 28,800	1.2%
	TOTAL OTHER OPERATING REVENUES	\$ 18,759	\$ 18,500	\$ 13,083	\$ 19,600	\$ 19,200	\$ 700	3.8%
	<b>Total REVENUES:</b>	<b>\$ 2,710,804</b>	<b>\$ 2,511,300</b>	<b>\$ 1,586,799</b>	<b>\$ 2,515,100</b>	<b>\$ 2,488,300</b>	<b>\$ (23,000)</b>	<b>-0.9%</b>
<b>Expenditures</b>								
	TOTAL PERSONNEL SERVICES	\$ -	\$ -	\$ 28,212	\$ -	\$ -	\$ -	0.0%
	TOTAL PURCHASED WATER	\$ 8,086	\$ 8,500	\$ 7,521	\$ 7,600	\$ 7,600	\$ (900)	-10.6%
	TOTAL MISC OPERATING	\$ 466	\$ 500	\$ (285)	\$ (300)	\$ -	\$ (500)	-100.0%
	TOTAL MAINT OF LAKE INTAKE	\$ 9,910	\$ 8,537	\$ 4,081	\$ 10,050	\$ 8,350	\$ (187)	-2.2%
	<b>Total OPERATING:</b>	<b>\$ 18,462</b>	<b>\$ 17,537</b>	<b>\$ 39,529</b>	<b>\$ 17,350</b>	<b>\$ 15,950</b>	<b>\$ (1,587)</b>	<b>-9.0%</b>
	TOTAL OPS, SUPERVISION, ENG	\$ 35,738	\$ 38,829	\$ 26,077	\$ 39,100	\$ 44,500	\$ 5,671	15%
	TOTAL POWER/GAS FOR PUMPING	\$ 23,635	\$ 26,500	\$ 16,829	\$ 25,400	\$ 26,300	\$ (200)	-1%
	TOTAL OPERATING PUMPING LABOR	\$ 15,643	\$ 14,003	\$ 11,942	\$ 18,050	\$ 13,200	\$ (803)	-6%
	TOTAL OPERATION MISC EXPENSES	\$ 7,479	\$ 31,100	\$ 13,555	\$ 22,850	\$ 8,200	\$ (22,900)	-74%
	TOTAL MAINT OF STRUCTURES	\$ 2,019	\$ 4,500	\$ 940	\$ 5,000	\$ 5,000	\$ 500	11%
	<b>Total PUMPING EXPENSES:</b>	<b>\$ 84,514</b>	<b>\$ 114,932</b>	<b>\$ 69,341</b>	<b>\$ 110,400</b>	<b>\$ 97,200</b>	<b>\$ (17,732)</b>	<b>-15%</b>
	TOTAL OPS, SUPERVISION, ENG	\$ 45,754	\$ 38,829	\$ 31,739	\$ 47,600	\$ 44,500	\$ 5,671	14.6%
	TOTAL OPERATION CHEMICALS	\$ 69,706	\$ 65,000	\$ 13,057	\$ 65,000	\$ 75,000	\$ 10,000	15.4%
	TOTAL OPERATON LABOR/EXPENSE	\$ 259,844	\$ 258,064	\$ 175,859	\$ 265,200	\$ 266,400	\$ 8,336	3.2%
	TOTAL OPERATION MISC EXPENSES	\$ 95,906	\$ 107,671	\$ 102,492	\$ 121,900	\$ 104,350	\$ (3,321)	-3.1%
	TOTAL OPERATING RENTS	\$ 9,810	\$ 10,000	\$ 5,723	\$ 9,800	\$ 3,260	\$ (6,740)	-67.4%
	TOTAL MAINT OF STRUCTURES	\$ 7,383	\$ 4,002	\$ 2,153	\$ 3,250	\$ 6,300	\$ 2,298	57.4%
	TOTAL MAINT OF TREATMENT EQUIP	\$ 46,467	\$ 46,186	\$ 35,024	\$ 52,950	\$ 47,950	\$ 1,764	3.8%
	<b>Total WATER TREATMENT EXPENSE:</b>	<b>\$ 534,868</b>	<b>\$ 529,752</b>	<b>\$ 366,046</b>	<b>\$ 565,700</b>	<b>\$ 547,760</b>	<b>\$ 18,008</b>	<b>3.4%</b>
	TOTAL OPERATION STORAGE FACILITY	\$ 10,170	\$ 10,829	\$ 9,099	\$ 13,700	\$ 10,500	\$ (329)	-3.0%
	TOTAL OPERATION MAINS	\$ 25,124	\$ 28,432	\$ 12,225	\$ 18,400	\$ 23,250	\$ (5,182)	-18.2%
	TOTAL OPERATION METER EXPENSE	\$ 13,570	\$ 21,758	\$ 14,750	\$ 6,300	\$ 17,100	\$ (4,658)	-21.4%
	TOTAL OPERATION CUSTOMER INSTLL	\$ 3,059	\$ 5,993	\$ 1,168	\$ 1,800	\$ 5,700	\$ (293)	-4.9%
	TOTAL OPERATION MISC EXPENSES	\$ 38,733	\$ 72,251	\$ 16,680	\$ 25,150	\$ 52,900	\$ (19,351)	-26.8%
	TOTAL MAINT RESERVOIRS/STNDPP	\$ 148,731	\$ 125,525	\$ 84,008	\$ 126,000	\$ 130,000	\$ 4,475	3.6%
	TOTAL MAINT OF MAINS	\$ 75,536	\$ 49,428	\$ 69,781	\$ 75,600	\$ 86,350	\$ 36,922	74.7%
	TOTAL MAINT OF SERVICES	\$ 66,181	\$ 57,178	\$ 26,577	\$ 103,700	\$ 95,650	\$ 38,472	67.3%
	TOTAL MAINT OF METERS	\$ 7,976	\$ 5,137	\$ 1,681	\$ 3,950	\$ 3,950	\$ (1,187)	-23.1%
	TOTAL MAINT OF HYDRANTS	\$ 23,130	\$ 16,271	\$ 1,479	\$ 41,550	\$ 50,000	\$ 33,729	207.3%
	TOTAL MAINT OF MISC PLANT	\$ 6,167	\$ 2,500	\$ 17,207	\$ 14,900	\$ 10,000	\$ 7,500	300.0%
	<b>Total TRANSMISSION/DISTRIBUTION EXPEI</b>	<b>\$ 418,378</b>	<b>\$ 395,302</b>	<b>\$ 254,654</b>	<b>\$ 431,050</b>	<b>\$ 485,400</b>	<b>\$ 90,098</b>	<b>22.8%</b>
	TOTAL SUPERVISION	\$ 14,544	\$ 14,428	\$ 12,144	\$ 18,250	\$ 14,450	\$ 22	0.2%
	TOTAL OPERATION METER READING	\$ 21,342	\$ 20,458	\$ 12,922	\$ 19,500	\$ 19,290	\$ (1,168)	-5.7%
	TOTAL CUSTOMER ACCTG/COLLECT	\$ 48,335	\$ 47,554	\$ 30,986	\$ 47,500	\$ 48,050	\$ 496	1.0%
	TOTAL UNCOLLECTIBLE ACCTS	\$ 380	\$ 1,100	\$ 1,554	\$ 2,350	\$ 2,500	\$ 1,400	127.3%
	<b>Total CUSTOMER ACCOUNTS EXPENSE:</b>	<b>\$ 84,602</b>	<b>\$ 83,540</b>	<b>\$ 57,607</b>	<b>\$ 87,600</b>	<b>\$ 84,290</b>	<b>\$ 750</b>	<b>0.9%</b>
	TOTAL EXECUTIVE/GENERAL SALARIES	\$ 131,228	\$ 131,476	\$ 76,031	\$ 114,050	\$ 119,582	\$ (11,894)	-9.0%
	TOTAL OFFICE SUPPLIES/EXPENSE	\$ 4,124	\$ 5,400	\$ 1,648	\$ 2,550	\$ 3,550	\$ (1,850)	-34.3%
	TOTAL OUTSIDE SERVICES EMPLOYED	\$ 53,747	\$ 42,980	\$ 45,855	\$ 70,400	\$ 56,700	\$ 13,720	31.9%
	TOTAL PROPERTY INSURANCE	\$ 15,634	\$ 17,815	\$ 3,790	\$ 16,550	\$ 17,600	\$ (215)	-1.2%
	TOTAL INJURIES/DAMAGES	\$ 23,951	\$ 29,000	\$ 15,168	\$ 23,000	\$ 29,000	\$ -	0.0%
	TOTAL EMPLOYEE PENSION/BENEFITS	\$ 285,658	\$ 342,070	\$ 210,224	\$ 318,250	\$ 285,518	\$ (56,552)	-16.5%
	TOTAL REGULATORY COMM EXPENSE	\$ 4,672	\$ 1,000	\$ -	\$ -	\$ -	\$ (1,000)	-100.0%
	TOTAL MISC GENERAL EXPENSES	\$ 16,476	\$ 16,133	\$ 11,314	\$ 19,500	\$ 32,900	\$ 16,767	103.9%
	TOTAL OPERATION RENTS	\$ 327	\$ -	\$ 243	\$ 350	\$ 350	\$ 350	100.0%
	<b>Total ADMINISTRATIVE GENERAL EXPENSES:</b>	<b>\$ 535,817</b>	<b>\$ 585,874</b>	<b>\$ 364,274</b>	<b>\$ 564,650</b>	<b>\$ 545,200</b>	<b>\$ (40,674)</b>	<b>-6.9%</b>
	<b>Total EXPENSES:</b>	<b>\$ 1,676,640</b>	<b>\$ 1,726,937</b>	<b>\$ 1,151,452</b>	<b>\$ 1,776,750</b>	<b>\$ 1,775,800</b>	<b>\$ 48,863</b>	<b>2.8%</b>
	TOTAL OTHER OPERATING EXPENSES	\$ 554,129	\$ 558,105	\$ 368,985	\$ 554,500	\$ 559,250	\$ 1,145	0.2%
	<b>Total OPERATING EXPENSES:</b>	<b>\$ 2,230,769</b>	<b>\$ 2,285,042</b>	<b>\$ 1,520,437</b>	<b>\$ 2,331,250</b>	<b>\$ 2,335,050</b>	<b>\$ 50,008</b>	<b>2.2%</b>
	<b>NET OPERATING INCOME(LOSS):</b>	<b>\$ 480,035</b>	<b>\$ 226,258</b>	<b>\$ 66,362</b>	<b>\$ 183,850</b>	<b>\$ 153,250</b>	<b>\$ (73,008)</b>	<b>-32.3%</b>
	TOTAL OTHER INCOME	\$ 3,376	\$ 1,000	\$ 1,006	\$ 3,000	\$ -	\$ (1,000)	-100.0%
	TOTAL INTEREST CHARGES	\$ 147,453	\$ 142,600	\$ 89,441	\$ 151,600	\$ 146,600	\$ 4,000	2.8%
	<b>TOTAL INCOME(LOSS):</b>	<b>\$ 335,958</b>	<b>\$ 84,658</b>	<b>\$ (22,073)</b>	<b>\$ 35,250</b>	<b>\$ 6,650</b>	<b>\$ (78,008)</b>	<b>-92.1%</b>

**CASH FLOW PROJECTION REPORT**

	<u>2010</u>	<u>YTD 2011</u>	<u>Proj 2011</u>	<u>Budget 2012</u>
Profit <Loss>	\$ 335,956	\$ 96,351	\$ 35,250	\$ 6,650
Depreciation	\$ 360,093	\$ 258,164	\$ 368,000	\$ 368,000
Amortization	\$ (23,642)	\$ -	\$ 2,600	\$ 2,600
Change in Receivables	\$ (59,059)	\$ (102,743)	\$ -	\$ -
Change in Inventory	\$ (17,412)	\$ (66,626)	\$ -	\$ -
Change in Plant	\$ (868,548)	\$ (361,640)	\$ (450,000)	\$ (282,700)
Change in Payables and Accruals	\$ 15,811	\$ (44,146)	\$ -	\$ -
Change in Debt	\$ 148,819	\$ (243,926)	\$ (243,926)	\$ (278,590)
New Debt Issued	\$ -	\$ -	\$ -	\$ 195,000
Change in Contributions	\$ -	\$ -	\$ -	\$ -
Change in Cash	\$ (107,981)	\$ (464,567)	\$ (288,076)	\$ 10,960
Beginning Cash	\$ (382,211)	\$ (490,192)	\$ (490,192)	\$ (778,268)
Ending Cash	\$ (490,192)	\$ (954,759)	\$ (778,268)	\$ (767,308)
Balance Check	\$ 0	\$ -		

<b>Water Utility 2012 Plant Additions and Construction</b>		
1	Purchase remaining valves and actuators for Racks 3,4 and 5	\$ 108,000
2	Install valves and actuators	\$ 12,000
3	Replace valves in distribution system	\$ 40,000
4	Water Meter Replacement/Inspection Program	\$ 75,000
5	Backup Chlorine Pump	\$ 8,200
6	Replace automatic, truck-mounted valve turner	\$ 15,000
7	Purchase emergency generator from WPPI	\$ 24,500
	<b>TOTAL</b>	<b>\$ 282,700</b>
*Propose to pay for \$195,000 with General Obligation Debt to be repaid by utility, \$87,700 from cash		

Account Number	Account Title	2010 Actual	2011 Budget	2011 Year To Date thru 8/11	2011 Projected	2012 Budget	Change from prior budget	% change from prior budget
<b>REVENUES</b>								
<b>MISC REVENUE</b>								
650-48600	CONTRIBUTION IN AID	501,507	50,000	0	20,000	0	-50,000	-100.0%
650-48900	OTHER REVENUES	3,302	3,600	736	1,100	1,100	-2,500	-69.4%
	<b>TOTAL MISC REVENUE</b>	<b>504,809</b>	<b>53,600</b>	<b>736</b>	<b>21,100</b>	<b>1,100</b>	<b>-52,500</b>	<b>-97.9%</b>
<b>SALES OF WATER</b>								
650-49611	RESIDENTIAL SERVICE	1,253,874	1,390,000	927,044	1,450,000	1,450,000	60,000	4.3%
650-49612	COMMERCIAL SERVICE	272,177	305,000	190,252	305,000	305,000	0	0.0%
650-49613	INDUSTRIAL SERVICE	114,372	110,000	83,648	127,000	115,000	5,000	4.5%
650-49462	PRIVATE FIRE PROTECTION	22,380	27,000	13,192	22,400	23,000	-4,000	-14.8%
650-49463	PUBLIC FIRE PROTECTION	462,722	515,000	323,399	510,000	515,000	0	0.0%
650-49464	MUNICIPAL	40,555	46,200	26,326	40,000	40,000	-6,200	-13.4%
650-49467	INTERDEPARTMENTAL	21,156	46,000	9,119	20,000	20,000	-26,000	-56.5%
	<b>TOTAL SALES OF WATER</b>	<b>2,187,236</b>	<b>2,439,200</b>	<b>1,572,979</b>	<b>2,474,400</b>	<b>2,468,000</b>	<b>28,800</b>	<b>1.2%</b>
<b>OTHER OPERATING REVENUES</b>								
650-49460	B/T/H SALES	1,533	0	590	900	1,200	1,200	100.0%
650-49470	FORFEITED DISCOUNTS	6,629	6,500	4,876	7,300	6,500	0	0.0%
650-49471	MISC REVENUE	890	1,700	580	900	1,000	-700	-41.2%
650-49474	OTHER WATER REVENUE	9,707	10,300	7,037	10,500	10,500	200	1.9%
650-49720	RENTS FROM WATER PROPERTY	0	0	0	0	0	0	0.0%
	<b>TOTAL OTHER OPERATING REVENUES</b>	<b>18,759</b>	<b>18,500</b>	<b>13,083</b>	<b>19,600</b>	<b>19,200</b>	<b>700</b>	<b>3.8%</b>
<b>Total REVENUES:</b>		<b>2,710,804</b>	<b>2,511,300</b>	<b>1,586,799</b>	<b>2,515,100</b>	<b>2,488,300</b>	<b>-23,000</b>	<b>-0.9%</b>
<b>EXPENDITURES</b>								
<b>OPERATING</b>								
<b>PERSONNEL SERVICES</b>								
650-56500-1500	OTHER EARNINGS	0	0	28,212	0	0	0	0.0%
	<b>TOTAL PERSONNEL SERVICES</b>	<b>0</b>	<b>0</b>	<b>28,212</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.0%</b>
<b>PURCHASED WATER</b>								
650-59602-2900	OTHER SERVICES	8,086	8,500	7,521	7,600	7,600	-900	-10.6%
	<b>TOTAL PURCHASED WATER</b>	<b>8,086</b>	<b>8,500</b>	<b>7,521</b>	<b>7,600</b>	<b>7,600</b>	<b>-900</b>	<b>-10.6%</b>
<b>MISC OPERATING</b>								
650-59603-2200	UTILITIES/TELEPHONE	466	500	-285	-300	0	-500	-100.0%
	<b>TOTAL MISC OPERATING</b>	<b>466</b>	<b>500</b>	<b>-285</b>	<b>-300</b>	<b>0</b>	<b>-500</b>	<b>-100.0%</b>
<b>MAINT OF LAKE INTAKE</b>								
650-59613-1220	WAGES - FULLTIME- UNION	5,460	3,537	4,075	5,000	3,650	113	3.2%
650-59613-2900	OTHER SERVICES	4,450	5,000	0	5,000	5,000	0	0.0%
650-59613-2990	TRANSPORTATION EXPENSE	0	0	6	50	0	0	0.0%
	<b>TOTAL MAINT OF LAKE INTAKE</b>	<b>9,910</b>	<b>8,537</b>	<b>4,081</b>	<b>10,050</b>	<b>8,350</b>	<b>-187</b>	<b>-2.2%</b>
<b>Total OPERATING:</b>		<b>18,462</b>	<b>17,537</b>	<b>39,529</b>	<b>17,350</b>	<b>15,950</b>	<b>-1,587</b>	<b>-9.0%</b>
<b>PUMPING EXPENSE</b>								
<b>OPS, SUPERVISION, ENG</b>								
650-59620-1200	WAGES - FULLTIME - NONUNION	35,738	38,829	26,077	39,100	44,500	5,671	14.6%
	<b>TOTAL OPS, SUPERVISION, ENG</b>	<b>35,738</b>	<b>38,829</b>	<b>26,077</b>	<b>39,100</b>	<b>44,500</b>	<b>5,671</b>	<b>14.6%</b>
<b>POWER/GAS FOR PUMPING</b>								
650-59623-2210	ELECTRICITY	18,927	20,500	13,563	20,500	20,900	400	2.0%
650-59623-2230	WATER EXPENSE	1,982	3,000	1,502	2,300	2,500	-500	-16.7%
650-59623-2240	SEWER EXPENSE	2,726	3,000	1,764	2,600	2,900	-100	-3.3%
	<b>TOTAL POWER/GAS FOR PUMPING</b>	<b>23,635</b>	<b>26,500</b>	<b>16,829</b>	<b>25,400</b>	<b>26,300</b>	<b>-200</b>	<b>-0.8%</b>
<b>OPERATING PUMPING LABOR</b>								
650-59624-1220	WAGES - FULLTIME- UNION	15,622	13,903	11,942	18,000	13,150	-753	-5.4%
650-59624-2990	TRANSPORTATION EXPENSE	22	100	0	50	50	-50	-50.0%
	<b>TOTAL OPERATING PUMPING LABOR</b>	<b>15,643</b>	<b>14,003</b>	<b>11,942</b>	<b>18,050</b>	<b>13,200</b>	<b>-803</b>	<b>-5.7%</b>
<b>OPERATION MISC EXPENSES</b>								
650-59626-2200	UTILITIES/TELEPHONE	481	500	274	500	500	0	0.0%
650-59626-2201	CELLULAR PHONE	926	600	822	1,250	1,400	800	133.3%
650-59626-2220	NATURAL GAS/HEAT	3,754	5,000	2,732	4,100	4,300	-700	-14.0%

Account Number	Account Title	2010 Actual	2011 Budget	2011 Year To Date thru 8/11	2011 Projected	2012 Budget	Change from prior budget	% change from prior budget
650-59626-2900	OTHER SERVICES	997	20,000	8,300	15,000	0	-20,000	-100.0%
650-59626-3900	OTHER SUPPLIES	1,320	5,000	1,426	2,000	2,000	-3,000	-60.0%
	<b>TOTAL OPERATION MISC EXPENSES</b>	<b>7,479</b>	<b>31,100</b>	<b>13,555</b>	<b>22,850</b>	<b>8,200</b>	<b>-22,900</b>	<b>-73.6%</b>
	<b>MAINT OF STRUCTURES</b>							
650-59631-2900	OTHER SERVICES	2,019	4,500	940	5,000	5,000	500	11.1%
	<b>TOTAL MAINT OF STRUCTURES</b>	<b>2,019</b>	<b>4,500</b>	<b>940</b>	<b>5,000</b>	<b>5,000</b>	<b>500</b>	<b>11.1%</b>
	<b>Total PUMPING EXPENSES:</b>	<b>84,514</b>	<b>114,932</b>	<b>69,341</b>	<b>110,400</b>	<b>97,200</b>	<b>-17,732</b>	<b>-15.4%</b>
	<b>WATER TREATMENT EXPENSE</b>							
	<b>OPS, SUPERVISION, ENG</b>							
650-59640-1200	WAGES - FULLTIME - NONUNION	45,754	38,829	31,739	47,600	44,500	5,671	14.6%
	<b>TOTAL OPS, SUPERVISION, ENG</b>	<b>45,754</b>	<b>38,829</b>	<b>31,739</b>	<b>47,600</b>	<b>44,500</b>	<b>5,671</b>	<b>14.6%</b>
	<b>OPERATION CHEMICALS</b>							
650-59641-3900	OTHER SUPPLIES	0	0	0	0	0	0	0.0%
650-59641-3910	CHEMICALS	69,706	65,000	13,057	65,000	75,000	10,000	15.4%
	<b>TOTAL OPERATION CHEMICALS</b>	<b>69,706</b>	<b>65,000</b>	<b>13,057</b>	<b>65,000</b>	<b>75,000</b>	<b>10,000</b>	<b>15.4%</b>
	<b>OPERATION LABOR/EXPENSE</b>							
650-59642-1220	WAGES - FULLTIME- UNION	58,851	49,764	30,602	46,000	47,000	-2,764	-5.6%
650-59642-2200	UTILITIES/TELEPHONE	0	0	0	0	0	0	0.0%
650-59642-2210	ELECTRICITY	76,926	78,000	50,702	86,000	88,000	10,000	12.8%
650-59642-2220	NATURAL GAS/HEAT	590	800	429	700	800	0	0.0%
650-59642-2230	WATER EXPENSE	20,607	35,000	11,514	20,000	21,000	-14,000	-40.0%
650-59642-2240	SEWER EXPENSE	227	500	6,745	7,000	600	100	20.0%
650-59642-2900	OTHER SERVICES	19,375	12,000	18,202	23,500	25,000	13,000	108.3%
650-59642-2902	MISC SERVICES-WTP BACKWASH CHG	70,290	70,000	46,667	70,000	70,000	0	0.0%
650-59642-3900	OTHER SUPPLIES	12,979	12,000	10,998	12,000	14,000	2,000	16.7%
	<b>TOTAL OPERATON LABOR/EXPENSE</b>	<b>259,844</b>	<b>258,064</b>	<b>175,859</b>	<b>265,200</b>	<b>266,400</b>	<b>8,336</b>	<b>3.2%</b>
	<b>OPERATION MISC EXPENSES</b>							
650-59643-1220	WAGES - FULLTIME- UNION	32,649	45,071	33,821	50,800	42,550	-2,521	-5.6%
650-59643-2200	UTILITIES/TELEPHONE	0	2,000	0	0	500	-1,500	-75.0%
650-59643-2220	NATURAL GAS/HEAT	34,531	40,000	26,601	39,900	41,000	1,000	2.5%
650-59643-2900	OTHER SERVICES	15,147	4,500	29,497	12,300	5,000	500	11.1%
650-59643-2990	TRANSPORTATION EXPENSE	14	100	36	50	100	0	0.0%
650-59643-3110	POSTAGE	75	1,000	41	50	200	-800	-80.0%
650-59643-3900	OTHER SUPPLIES	13,491	15,000	12,496	18,800	15,000	0	0.0%
	<b>TOTAL OPERATION MISC EXPENSES</b>	<b>95,906</b>	<b>107,671</b>	<b>102,492</b>	<b>121,900</b>	<b>104,350</b>	<b>-3,321</b>	<b>-3.1%</b>
	<b>OPERATING RENTS</b>							
650-59644-2900	OTHER SERVICES-Generator lease	9,810	10,000	5,723	9,800	3,260	-6,740	-67.4%
	<b>TOTAL OPERATING RENTS</b>	<b>9,810</b>	<b>10,000</b>	<b>5,723</b>	<b>9,800</b>	<b>3,260</b>	<b>-6,740</b>	<b>-67.4%</b>
	<b>MAINT OF STRUCTURES</b>							
650-59651-1220	WAGES - FULLTIME- UNION	3,867	3,502	2,153	3,250	3,300	-202	-5.8%
650-59651-2900	OTHER SERVICES	3,515	0	0	0	2,000	2,000	100.0%
650-59651-3900	OTHER SUPPLIES	0	500	0	0	1,000	500	100.0%
	<b>TOTAL MAINT OF STRUCTURES</b>	<b>7,383</b>	<b>4,002</b>	<b>2,153</b>	<b>3,250</b>	<b>6,300</b>	<b>2,298</b>	<b>57.4%</b>
	<b>MAINT OF TREATMENT EQUIP</b>							
650-59652-1220	WAGES - FULLTIME- UNION	44,126	45,386	34,937	52,400	42,850	-2,536	-5.6%
650-59652-2990	TRANSPORTATION EXPENSE	0	0	5	50	100	100	100.0%
650-59652-3900	OTHER SUPPLIES	2,341	800	82	500	5,000	4,200	525.0%
	<b>TOTAL MAINT OF TREATMENT EQUIP</b>	<b>46,467</b>	<b>46,186</b>	<b>35,024</b>	<b>52,950</b>	<b>47,950</b>	<b>1,764</b>	<b>3.8%</b>
	<b>Total WATER TREATMENT EXPENSE:</b>	<b>534,868</b>	<b>529,752</b>	<b>366,046</b>	<b>565,700</b>	<b>547,760</b>	<b>18,008</b>	<b>3.4%</b>
	<b>TRANSMISSION/DISTRIBUTION</b>							
	<b>OPERATION STORAGE FACILITY</b>							
650-59661-1220	WAGES - FULLTIME- UNION	5,783	6,129	7,403	11,100	5,800	-329	-5.4%
650-59661-2200	UTILITIES/TELEPHONE	1,081	1,200	750	1,150	1,200	0	0.0%
650-59661-2210	ELECTRICITY	2,943	1,000	515	800	1,000	0	0.0%
650-59661-2220	NATURAL GAS	0	2,000	0	0	2,000	0	0.0%
650-59661-2900	OTHER SERVICES	0	0	0	0	0	0	0.0%
650-59661-2990	TRANSPORTATION EXPENSE	363	500	431	650	500	0	0.0%
	<b>TOTAL OPERATION STORAGE FACILITY</b>	<b>10,170</b>	<b>10,829</b>	<b>9,099</b>	<b>13,700</b>	<b>10,500</b>	<b>-329</b>	<b>-3.0%</b>

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<b>OPERATION MAINS</b>								
650-59662-1220	WAGES - FULLTIME- UNION	22,586	21,432	11,558	17,400	20,250	-1,182	-5.5%
650-59662-2990	TRANSPORTATION EXPENSE	1,207	3,000	667	1,000	1,000	-2,000	-66.7%
650-59662-3900	OTHER SUPPLIES	1,331	4,000	0	0	2,000	-2,000	-50.0%
	<b>TOTAL OPERATION MAINS</b>	<b>25,124</b>	<b>28,432</b>	<b>12,225</b>	<b>18,400</b>	<b>23,250</b>	<b>-5,182</b>	<b>-18.2%</b>
<b>OPERATION METER EXPENSE</b>								
650-59663-1220	WAGES - FULLTIME- UNION	34,768	39,258	18,254	27,400	37,100	-2,158	-5.5%
650-59663-2900	OTHER SERVICES	-24,094	-25,500	-6,051	-25,000	-25,000	500	-2.0%
650-59663-2990	TRANSPORTATION EXPENSE	1,494	4,000	942	1,500	2,000	-2,000	-50.0%
650-59663-3900	OTHER SUPPLIES	1,402	4,000	1,604	2,400	3,000	-1,000	-25.0%
	<b>TOTAL OPERATION METER EXPENSE</b>	<b>13,570</b>	<b>21,758</b>	<b>14,750</b>	<b>6,300</b>	<b>17,100</b>	<b>-4,658</b>	<b>-21.4%</b>
<b>OPERATION CUSTOMER INSTLL</b>								
650-59664-1220	WAGES - FULLTIME- UNION	2,866	5,393	1,114	1,700	5,100	-293	-5.4%
650-59664-2990	TRANSPORTATION EXPENSE	165	500	54	100	300	-200	-40.0%
650-59664-3900	OTHER SUPPLIES	28	100	0	0	300	200	200.0%
	<b>TOTAL OPERATION CUSTOMER INSTLL</b>	<b>3,059</b>	<b>5,993</b>	<b>1,168</b>	<b>1,800</b>	<b>5,700</b>	<b>-293</b>	<b>-4.9%</b>
<b>OPERATION MISC EXPENSES</b>								
650-59665-1220	WAGES - FULLTIME- UNION	22,374	45,351	7,394	11,100	42,800	-2,551	-5.6%
650-59665-2200	UTILITIES/TELEPHONE	0	700	0	0	700	0	0.0%
650-59665-2201	CELLULAR PHONE	1,800	700	744	1,100	1,100	400	57.1%
650-59665-2220	NATURAL GAS/HEAT	1,882	3,500	1,586	2,400	3,000	-500	-14.3%
650-59665-2900	OTHER SERVICES	4,630	12,600	1,735	2,600	600	-12,000	-95.2%
650-59665-2990	TRANSPORTATION EXPENSE	89	3,500	40	100	1,000	-2,500	-71.4%
650-59665-3100	OFFICE SUPPLIES	0	1,200	365	600	1,000	-200	-16.7%
650-59665-3110	POSTAGE	0	700	0	0	700	0	0.0%
650-59665-3900	OTHER SUPPLIES	7,959	4,000	4,816	7,250	2,000	-2,000	-50.0%
	<b>TOTAL OPERATION MISC EXPENSES</b>	<b>38,733</b>	<b>72,251</b>	<b>16,680</b>	<b>25,150</b>	<b>52,900</b>	<b>-19,351</b>	<b>-26.8%</b>
<b>MAINT RESERVOIRS/STNDPP</b>								
650-59672-2900	OTHER SERVICES	148,673	125,525	84,008	126,000	130,000	4,475	3.6%
650-59672-3900	OTHER SUPPLIES	58	0	0	0	0	0	0.0%
	<b>TOTAL MAINT RESERVOIRS/STNDPP</b>	<b>148,731</b>	<b>125,525</b>	<b>84,008</b>	<b>126,000</b>	<b>130,000</b>	<b>4,475</b>	<b>3.6%</b>
<b>MAINT OF MAINS</b>								
650-59673-1220	WAGES - FULLTIME- UNION	7,533	13,378	13,720	20,600	12,650	-728	-5.4%
650-59673-2900	OTHER SERVICES	62,004	30,000	46,076	40,000	66,000	36,000	120.0%
650-59673-2990	TRANSPORTATION EXPENSE	312	2,550	1,210	1,800	1,700	-850	-33.3%
650-59673-3900	OTHER SUPPLIES	5,688	3,500	8,774	13,200	6,000	2,500	71.4%
	<b>TOTAL MAINT OF MAINS</b>	<b>75,536</b>	<b>49,428</b>	<b>69,781</b>	<b>75,600</b>	<b>86,350</b>	<b>36,922</b>	<b>74.7%</b>
<b>MAINT OF SERVICES</b>								
650-59675-1220	WAGES - FULLTIME- UNION	28,936	40,378	22,309	33,500	38,150	-2,228	-5.5%
650-59675-2900	OTHER SERVICES	27,220	10,000	3,048	62,000	50,000	40,000	400.0%
650-59675-2990	TRANSPORTATION EXPENSE	1,620	4,000	792	1,200	2,500	-1,500	-37.5%
650-59675-3900	OTHER SUPPLIES	8,406	2,800	428	7,000	5,000	2,200	78.6%
	<b>TOTAL MAINT OF SERVICES</b>	<b>66,181</b>	<b>57,178</b>	<b>26,577</b>	<b>103,700</b>	<b>95,650</b>	<b>38,472</b>	<b>67.3%</b>
<b>MAINT OF METERS</b>								
650-59676-1220	WAGES - FULLTIME- UNION	4,578	2,837	1,826	2,750	2,700	-137	-4.8%
650-59676-2900	OTHER SERVICES	-2,479	-3,000	-804	-3,000	-3,000	0	0.0%
650-59676-2990	TRANSPORTATION EXPENSE	417	300	117	200	250	-50	-16.7%
650-59676-3900	OTHER SUPPLIES	5,459	5,000	543	4,000	4,000	-1,000	-20.0%
	<b>TOTAL MAINT OF METERS</b>	<b>7,976</b>	<b>5,137</b>	<b>1,681</b>	<b>3,950</b>	<b>3,950</b>	<b>-1,187</b>	<b>-23.1%</b>
<b>MAINT OF HYDRANTS</b>								
650-59677-1220	WAGES - FULLTIME- UNION	9,408	9,771	915	1,400	9,250	-521	-5.3%
650-59677-2900	OTHER SERVICES	3,788	0	0	30,000	30,000	30,000	100.0%
650-59677-2990	TRANSPORTATION EXPENSE	540	1,500	84	150	750	-750	-50.0%
650-59677-3900	OTHER SUPPLIES	9,395	5,000	481	10,000	10,000	5,000	100.0%
	<b>TOTAL MAINT OF HYDRANTS</b>	<b>23,130</b>	<b>16,271</b>	<b>1,479</b>	<b>41,550</b>	<b>50,000</b>	<b>33,729</b>	<b>207.3%</b>
<b>MAINT OF MISC PLANT</b>								
650-59678-2900	OTHER SERVICES	6,167	2,500	17,207	14,900	10,000	7,500	300.0%
	<b>TOTAL MAINT OF MISC PLANT</b>	<b>6,167</b>	<b>2,500</b>	<b>17,207</b>	<b>14,900</b>	<b>10,000</b>	<b>7,500</b>	<b>300.0%</b>
							0	0.0%
	<b>Total TRANSMISSION/DISTRIBUTION EXPENSE:</b>	<b>418,378</b>	<b>395,302</b>	<b>254,654</b>	<b>431,050</b>	<b>485,400</b>	<b>90,098</b>	<b>22.8%</b>

Account Number	Account Title	2010 Actual	2011 Budget	2011 Year To Date thru 8/11	2011 Projected	2012 Budget	Change from prior budget	% change from prior budget
<b>CUSTOMER ACCOUNTS EXPENSE</b>								
<b>SUPERVISION</b>								
650-59901-1100	FULLTIME SALARIES	14,523	14,408	12,132	18,200	14,400	-8	-0.1%
650-59901-2201	CELLULAR PHONE	21	20	12	50	50	30	150.0%
	<b>TOTAL SUPERVISION</b>	<b>14,544</b>	<b>14,428</b>	<b>12,144</b>	<b>18,250</b>	<b>14,450</b>	<b>22</b>	<b>0.2%</b>
<b>OPERATION METER READING</b>								
650-59902-1220	WAGES - FULLTIME- UNION	15,453	15,406	8,466	12,700	13,500	-1,906	-12.4%
650-59902-1240	WAGES-UNION PART TIME	4,539	3,528	3,227	4,850	3,800	272	7.7%
650-59902-1390	WAGES-CAR ALLOW	0	141	0	0	140	-1	-0.7%
650-59902-2201	CELLULAR PHONE	65	90	29	50	50	-40	-44.4%
650-59902-2900	OTHER SERVICES	1,032	1,003	782	1,200	1,200	197	19.6%
650-59902-2990	TRANSPORTATION EXPENSE	0	0	174	300	200	200	100.0%
650-59902-3110	POSTAGE	225	270	234	350	350	80	29.6%
650-59902-3900	OTHER SUPPLIES	28	20	10	50	50	30	150.0%
	<b>TOTAL OPERATION METER READING</b>	<b>21,342</b>	<b>20,458</b>	<b>12,922</b>	<b>19,500</b>	<b>19,290</b>	<b>-1,168</b>	<b>-5.7%</b>
<b>CUSTOMER ACCTG/COLLECT</b>								
650-59903-1220	WAGES - FULLTIME- UNION	37,303	34,721	23,300	34,950	35,000	279	0.8%
650-59903-2990	TRANSPORTATION EXPENSE	95	0	18	50	50	50	100.0%
650-59903-3110	POSTAGE	7,721	7,833	4,531	7,800	8,000	167	2.1%
650-59903-3900	OTHER SUPPLIES	3,217	5,000	3,138	4,700	5,000	0	0.0%
	<b>TOTAL CUSTOMER ACCTG/COLLECT</b>	<b>48,335</b>	<b>47,554</b>	<b>30,986</b>	<b>47,500</b>	<b>48,050</b>	<b>496</b>	<b>1.0%</b>
<b>UNCOLLECTIBLE ACCTS</b>								
650-59904-2900	OTHER SERVICES	380	1,100	1,554	2,350	2,500	1,400	127.3%
	<b>TOTAL UNCOLLECTIBLE ACCTS</b>	<b>380</b>	<b>1,100</b>	<b>1,554</b>	<b>2,350</b>	<b>2,500</b>	<b>1,400</b>	<b>127.3%</b>
<b>Total CUSTOMER ACCOUNTS EXPENSE:</b>		<b>84,602</b>	<b>83,540</b>	<b>57,607</b>	<b>87,600</b>	<b>84,290</b>	<b>750</b>	<b>0.9%</b>
<b>ADMINISTRATIVE/GENERAL</b>								
<b>EXECUTIVE/GENERAL SALARIES</b>								
650-59920-1100	FULLTIME SALARIES	17,909	17,860	11,678	17,500	17,860	0	0.0%
650-59920-1200	WAGES - FULLTIME - NONUNION	67,443	64,127	35,555	53,350	7,800	-56,327	-87.8%
650-59920-1220	WAGES - FULLTIME- UNION	45,875	49,489	28,798	43,200	24,672	-24,817	-50.1%
650-59920-2100	CITY ADMIN ALLOCATION(WAGES)	0	0	0	0	69,250	69,250	100.0%
	<b>TOTAL EXECUTIVE/GENERAL SALARIES</b>	<b>131,228</b>	<b>131,476</b>	<b>76,031</b>	<b>114,050</b>	<b>119,582</b>	<b>-11,894</b>	<b>-9.0%</b>
<b>OFFICE SUPPLIES/EXPENSE</b>								
650-59921-2200	UTILITIES/TELEPHONE	877	600	369	600	600	0	0.0%
650-59921-2900	OTHER SERVICES	0	0	0	0	0	0	0.0%
650-59921-2910	PRINTING/ADVERTISING	0	200	176	300	300	100	50.0%
650-59921-2920	TRAINING	342	600	0	0	0	-600	-100.0%
650-59921-3100	OFFICE SUPPLIES	133	500	96	150	150	-350	-70.0%
650-59921-3110	POSTAGE	0	0	0	0	0	0	0.0%
650-59921-3210	MEMBERSHIP & DUES	0	0	0	0	0	0	0.0%
650-59921-3300	TRAVEL	49	600	0	0	0	-600	-100.0%
650-59921-3900	OTHER SUPPLIES	2,723	2,900	1,008	1,500	2,500	-400	-13.8%
	<b>TOTAL OFFICE SUPPLIES/EXPENSE</b>	<b>4,124</b>	<b>5,400</b>	<b>1,648</b>	<b>2,550</b>	<b>3,550</b>	<b>-1,850</b>	<b>-34.3%</b>
<b>OUTSIDE SERVICES EMPLOYED</b>								
650-59923-1200	WAGES - FULLTIME - NONUNION	0	0	0	0	0	0	0.0%
650-59923-1220	WAGES - FULLTIME- UNION	0	0	0	0	0	0	0.0%
650-59923-1330	HEALTH INSURANCE	0	0	-731	0	0	0	0.0%
650-59923-1333	HEALTH REIMBURSEMENT EXPENSE	0	0	0	0	0	0	0.0%
650-59923-1340	LIFE INSURANCE	0	300	0	0	0	-300	-100.0%
650-59923-2100	CITY ADMIN ALLOCATION(OTHER)	34,903	25,000	41,711	62,000	48,000	23,000	92.0%
650-59923-2160	SAFETY COORDINATOR	0	1,700	0	1,700	1,700	0	0.0%
650-59923-2403	ACCOUNTING SOFTWARE MAINT	333	500	0	0	0	-500	-100.0%
650-59923-2900	OTHER SERVICES	5,621	2,980	1,475	2,200	2,500	-480	-16.1%
650-59923-2902	MISC SERVICES-CONSULTANT FEE	8,389	8,000	0	0	0	-8,000	-100.0%
650-59923-5950	TRANSFER TO CAP PROJ FNDS	4,500	4,500	3,400	4,500	4,500	0	0.0%
	<b>TOTAL OUTSIDE SERVICES EMPLOYED</b>	<b>53,747</b>	<b>42,980</b>	<b>45,855</b>	<b>70,400</b>	<b>56,700</b>	<b>13,720</b>	<b>31.9%</b>
<b>PROPERTY INSURANCE</b>								
650-59924-5100	PUBLIC LIABILITY INSURANCE	2,257	3,500	1,317	2,500	2,500	-1,000	-28.6%
650-59924-5110	PROPERTY INSURANCE	8,300	9,200	0	9,200	10,000	800	8.7%
650-59924-5111	CONTRACTOR EQUIPMENT INS	115	140	0	150	150	10	7.1%
650-59924-5120	FLEET INSURANCE	2,404	2,300	1,215	2,300	2,300	0	0.0%
650-59924-5140	UMBRELLA INSURANCE	2,228	2,300	1,203	2,300	2,300	0	0.0%

Account Number	Account Title	2010 Actual	2011 Budget	2011 Year To Date thru 8/11	2011 Projected	2012 Budget	Change from prior budget	% change from prior budget
650-59924-5170	LINEBACKER INSURANCE	0	0	0	0	0	0	0.0%
650-59924-5180	BOILER INSURANCE	167	185	0	0	200	15	8.1%
650-59924-5190	CRIME INSURANCE	163	190	55	100	150	-40	-21.1%
	<b>TOTAL PROPERTY INSURANCE</b>	<b>15,634</b>	<b>17,815</b>	<b>3,790</b>	<b>16,550</b>	<b>17,600</b>	<b>-215</b>	<b>-1.2%</b>
	<b>INJURIES/DAMAGES</b>							
650-59925-5130	WORKMEN'S COMPENSATION	23,951	29,000	15,168	23,000	29,000	0	0.0%
	<b>TOTAL INJURIES/DAMAGES</b>	<b>23,951</b>	<b>29,000</b>	<b>15,168</b>	<b>23,000</b>	<b>29,000</b>	<b>0</b>	<b>0.0%</b>
	<b>EMPLOYEE PENSION/BENEFITS</b>							
650-59926-1310	WI RETIREMENT	75,570	83,328	50,505	75,800	44,818	-38,510	-46.2%
650-59926-1320	FICA	0	0	-201	-300	0	0	0.0%
650-59926-1330	HEALTH INSURANCE	135,282	166,400	100,534	150,800	143,500	-22,900	-13.8%
650-59926-1331	HEALTH INSURANCE DEDUCTBL	1,046	1,200	1,200	1,200	0	-1,200	-100.0%
650-59926-1332	HEALTH INSURANCE-RETIREE	64,870	72,400	45,958	72,400	57,000	-15,400	-21.3%
650-59926-1333	HEALTH REIMBURSEMENT EXPENSE	12,880	16,134	10,756	16,150	13,850	-2,284	-14.2%
650-59926-1340	LIFE INSURANCE	2,467	2,608	1,472	2,200	2,350	-258	-9.9%
650-59926-1350	OTHER BENEFITS	1,259	0	0	0	0	0	0.0%
650-59926-2100	CITY ADMIN ALLOCATION(BENEFITS)	0	0	0	0	24,000	24,000	100.0%
650-59926-2900	OTHER SERVICES	-7,715	0	0	0	0	0	0.0%
	<b>TOTAL EMPLOYEE PENSION/BENEFITS</b>	<b>285,658</b>	<b>342,070</b>	<b>210,224</b>	<b>318,250</b>	<b>285,518</b>	<b>-56,552</b>	<b>-16.5%</b>
	<b>REGULATORY COMM EXPENSE</b>							
650-59928-2900	OTHER SERVICES	4,672	1,000	0	0	0	-1,000	-100.0%
	<b>TOTAL REGULATORY COMM EXPENSE</b>	<b>4,672</b>	<b>1,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-1,000</b>	<b>-100.0%</b>
	<b>MISC GENERAL EXPENSES</b>							
650-59930-1220	WAGES - FULLTIME- UNION	7,251	5,113	6,292	9,450	22,850	17,737	346.9%
650-59930-2900	OTHER SERVICES	17	20	464	700	700	680	3400.0%
650-59930-2910	PRINTING/ADVERTISING	3,258	5,000	1,113	1,700	1,700	-3,300	-66.0%
650-59930-2920	TRAINING	1,307	2,000	2,425	3,650	3,650	1,650	82.5%
650-59930-2990	TRANSPORTATION EXPENSE	142	200	346	550	550	350	175.0%
650-59930-3110	POSTAGE	0	0	0	0	0	0	0.0%
650-59930-3210	MEMBERSHIP & DUES	3,959	3,300	380	3,000	3,000	-300	-9.1%
650-59930-3220	PUBLICATIONS	80	0	0	0	0	0	0.0%
650-59930-3300	TRAVEL	463	500	200	300	300	-200	-40.0%
650-59930-3900	OTHER SUPPLIES	0	0	95	150	150	150	100.0%
	<b>TOTAL MISC GENERAL EXPENSES</b>	<b>16,476</b>	<b>16,133</b>	<b>11,314</b>	<b>19,500</b>	<b>32,900</b>	<b>16,767</b>	<b>103.9%</b>
	<b>OPERATION RENTS</b>							
650-59931-3900	OTHER SUPPLIES	327	0	243	350	350	350	100.0%
	<b>TOTAL OPERATION RENTS</b>	<b>327</b>	<b>0</b>	<b>243</b>	<b>350</b>	<b>350</b>	<b>350</b>	<b>100.0%</b>
	<b>Total ADMINISTRATIVE GENERAL EXPENSES:</b>	<b>535,817</b>	<b>585,874</b>	<b>364,274</b>	<b>564,650</b>	<b>545,200</b>	<b>-40,674</b>	<b>-6.9%</b>
	<b>Total EXPENSES:</b>	<b>1,676,640</b>	<b>1,726,937</b>	<b>1,151,452</b>	<b>1,776,750</b>	<b>1,775,800</b>	<b>48,863</b>	<b>2.8%</b>
	<b>OTHER OPERATING EXPENSES</b>							
650-59403-9750	DEPRECIATION EXPENSE	368,198	368,000	246,736	368,000	368,000	0	0.0%
650-59408-2100	CITY ADMIN ALLOCATION(FICA)	0	0	0	0	5,600	5,600	100.0%
650-59408-9700	PROPERTY TAX EQUIVALENT	139,492	140,000	93,347	140,000	140,000	0	0.0%
650-59408-9701	OTHER TAXES(FICA/PSC ASSMT)	44,377	47,605	28,901	44,000	43,150	-4,455	-9.4%
650-59408-9703	PSC REMAINDER ASSESSMENT	2,062	2,500	0	2,500	2,500	0	0.0%
	<b>TOTAL OTHER OPERATING EXPENSES</b>	<b>554,129</b>	<b>558,105</b>	<b>368,985</b>	<b>554,500</b>	<b>559,250</b>	<b>1,145</b>	<b>0.2%</b>
	<b>Total OPERATING EXPENSES:</b>	<b>2,230,769</b>	<b>2,285,042</b>	<b>1,520,437</b>	<b>2,331,250</b>	<b>2,335,050</b>	<b>50,008</b>	<b>2.2%</b>
	<b>NET OPERATING INCOME(LOSS):</b>	<b>480,035</b>	<b>226,258</b>	<b>66,362</b>	<b>183,850</b>	<b>153,250</b>	<b>-73,008</b>	<b>-32.3%</b>
	<b>OTHER INCOME</b>							
650-49415	REVENUES FROM MDSE & JOBBING	4,220	2,000	1,006	1,500	2,000	0	0.0%
650-49416	MERCHANDISING & JOBBING COSTS	-844	-1,000	0	1,500	-2,000	-1,000	100.0%
650-49419	INTEREST & DIVIDEND INCOME	0	0	0	0	0	0	0.0%
	<b>TOTAL OTHER INCOME</b>	<b>3,376</b>	<b>1,000</b>	<b>1,006</b>	<b>3,000</b>	<b>0</b>	<b>-1,000</b>	<b>-100.0%</b>
	<b>TOTAL INCOME(LOSS) BEFORE INTEREST:</b>	<b>483,411</b>	<b>227,258</b>	<b>67,368</b>	<b>186,850</b>	<b>153,250</b>	<b>-74,008</b>	<b>-32.6%</b>

Account Number	Account Title	2010 Actual	2011 Budget	2011 Year To Date thru 8/11	2011 Projected	2012 Budget	Change from prior budget	% change from prior budget
	<b>INTEREST CHARGES</b>							
650-59427-6210	INTEREST LONG TERM DEBT	128,725	140,000	89,441	135,000	130,000	-10,000	-7.1%
650-49426	OTHER INCOME DEDUCTIONS	0	0	0	0	0	0	0.0%
650-49428	AMORTIZATION OF DEBT DISC/CHRG	3,904	2,600	0	2,600	2,600	0	0.0%
650-49430	INTEREST ON DEBT-MUNI	14,824	0	0	14,000	14,000	14,000	100.0%
650-49435	MISC DEBITS TO SURPLUS	0	0	0	0	0	0	0.0%
	<b>TOTAL INTEREST CHARGES</b>	<b>147,453</b>	<b>142,600</b>	<b>89,441</b>	<b>151,600</b>	<b>146,600</b>	<b>4,000</b>	<b>2.8%</b>
	<b>TOTAL INCOME(LOSS):</b>	<b>335,958</b>	<b>84,658</b>	<b>-22,073</b>	<b>35,250</b>	<b>6,650</b>	<b>-78,008</b>	<b>-92.1%</b>



State of Wisconsin  
DEPARTMENT OF NATURAL RESOURCES  
Northeast Region Headquarters  
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Green Bay WI 54313-6727

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Cathy Stepp, Secretary  
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October 7, 2011

Mr. Greg Buckley, City Manager  
City of Two Rivers  
1717 East Park Street, P.O. Box 87  
Two Rivers, WI 54241

PWSID #43604363  
Two Rivers Waterworks-MC  
Two Rivers, WI  
Manitowoc County

Dear Mr. Buckley:

Attached is a report on the sanitary survey of the public water supply system serving the City of Two Rivers. This investigation was conducted on Wednesday, September 28, 2011. The purpose of the sanitary survey is to evaluate the system's source, facilities, equipment, operation, maintenance, and management as they relate to providing safe drinking water. The sanitary survey is also an opportunity to update the Department's records, provide technical assistance, and identify potential risks that may adversely affect drinking water quality. The attached report outlines the final findings, discusses problems that need to be addressed, and timelines for corrective action where appropriate.

The full cooperation extended by Kevin Perry and Larry Lambries during the inspection was greatly appreciated.

A plan for corrective action, including a work schedule or completion of corrective action for all deficiencies identified in the attached report, must be completed by December 1, 2011. Failure to submit the corrective action plan or complete the corrective action will result in enforcement action. Depending on the type of corrective action you employ, you may need to obtain prior approval and submit plans to the Department.

Thank you for your cooperation with the drinking water program. If you have any questions, or would like me to review the contents of this report at an upcoming committee meeting, please call me at (920) 662-5414.

Sincerely,

Wendy Anderson, P. E.  
Water Supply Engineer

Encl.

ecopy: File  
Public Water Systems, DG/5  
Larry Landsness, DG/5  
Kevin Perry, Two Rivers

# REPORT ON THE SANITARY SURVEY OF THE PUBLIC WATER SUPPLY SYSTEM SERVING THE CITY OF TWO RIVERS

## General System Description

The water supply system is owned by the City of Two Rivers and operated by Two Rivers Water and Light Utility. The system began in 1902 when the source of the water was shallow wells, which were augmented by a river intake with chlorine chemical treatment. In 1924, the wells were replaced by a raw water intake and in 1935, a 2 MGD conventional filtration system was constructed. The plant was expanded to 4 MGD in 1954. In September 2003, the Department approved the conversion of the conventional system to a 3 MGD (future capacity of 5 MGD) ultrafiltration, water treatment system. The plant went on line in November 2004.

The water supply system is currently composed of: 1 raw water intake, 1 shore well, 3 low lift pumps delivering raw water to the ultrafiltration plant, 2 CT tanks, 2 clearwells, 3 high lift pumps delivering water to the distribution system, 72 miles of water main, 2 elevated storage tanks, 1 ground storage reservoir and booster station (with chlorine boosting), and 2 pressure zones. Chemical addition consists of sodium hydroxide for pH control, sodium hypochlorite for disinfection, and fluorosilicic acid for dental benefit.

The current approved Great Lakes Compact Withdrawal Baseline Level is 3.45 MGD.

### ***Description of Unit Processes***

Raw Water Intake: One intake supplies water from Lake Michigan to the shore well. This intake was installed in 1923. It is 24-inches in diameter, approximately 6300 feet long, and is located in 33 feet of water.

Underwater inspections of the intake crib are performed annually (typically in September) and have revealed minimal concern over zebra mussel encrustation. Sodium hypochlorite is injected approximately 1 foot below the top of the wooden crib for zebra mussel control. The feed rate of 1 ppm is typical in order to maintain a chlorine level of 0.3-0.5 ppm at the continuous analyzer on the incoming line at the plant.

Shore Well: The shore well is located on the banks of Lake Michigan directly east of the ultrafiltration plant. This structure houses the well and bar screen.

The circular shore well is 20 feet in diameter and 22 feet deep. A fixed fiberglass bar screen with 1-inch openings prevents sticks, fish, scooters, etc. from reaching the low lift pumps. The shore well is removed from service twice each year for cleaning. During cleaning, the shore well can be bypassed and the low lift pumps draw directly from the raw water intake. The total capacity of the shore well is approximately 52,000 gallons. Normal water level is at 11 feet. The shore well is equipped with a low level alarm (8 feet) that would indicate frazil ice formation. During winter, raw water is pumped from a connection between the shore well and the pre-filters into the old solids contactor. This water is then used to back flush the intake when freezing problems occur. This was used during the winter 2010-2011.

Low Lift Pumps: A 16-inch line from the shore well feeds water to a common header and three vertical split case centrifugal low lift pumps located in the basement of the ultrafiltration plant. Each pump has a capacity of 1400 gpm and is equipped with a variable frequency drive. The pumps operate with a discharge pressure of 25 psi in order to supply the membranes with water at a constant pressure of 7 psi.

Strainers/Pre-filters: The low lift pumps discharge to an 18-inch common header feeding two straining filters in the basement of the ultrafiltration plant. The stainless steel straining elements have a slot size of 200 microns. Each strainer is sized for 3.0 MGD. The strainers automatically backwash based on head loss or elapsed time - currently every 30 minutes. The waste is discharged to the surge tank, which eventually discharges to the wastewater treatment plant.

Membranes: The 18-inch common line from the strainers then splits, supplying each membrane rack (five present and one future). A pressure transducer on the membrane influent line controls the VFD's on the low lift pumps to provide a constant raw water manifold pressure. The five membrane racks, called HYDRABLOCs, each consist of 45 HYDRAcap60 modules (total of 225 modules), with space for 48 modules (total of 240 modules). Originally only 36 modules were installed, but due to the flux rate achieved, this was increased to 45 shortly after the plant started up. The HYDRAcap60 modules are manufactured by Hydranautics of Oceanside, California. Each PVC module is 8.9 inches in diameter and 67.25 inches long and contains 13,200 fibers with a membrane surface area of 500 square feet. Total membrane area per rack is 22,500 square feet. The membrane fibers are hydrophilic polyethersulfone hollow fiber with a 0.025 micron pore size. The membrane fiber operates with inside to outside flow and has an inside diameter of 0.8 mm. The fiber has an acceptable pH range of 2 to 13, a continuous chlorine tolerance of 3 ppm, and a maximum chlorine tolerance of 200 ppm maximum.

The design fluxes illustrated below are all based on inside surface area, one rack (out of five) out of service, and three 10-minute integrity tests per day per rack. When the plant expanded from 38 to 45 modules per rack, this was in order to reduce the loading on the membranes. The capacity stayed the same, but the flux was reduced.

<u>Condition No. 1 - Winter</u>	<u>Condition No. 2 - Summer</u>	<u>Condition No. 3 - Late Spring</u>
1.6 MGD at 0.5°C	3.0 MGD at 20°C	2.8 MGD at 10°C
Gross production flux = 17.8 gfd	Gross production flux = 33.3 gfd	Gross production flux = 31.1 gfd
Net production flux = 21.4 gfd	Net production flux = 40.2 gfd	Net production flux = 36 gfd
30-day cleaning frequency	30-day cleaning frequency	14-day cleaning frequency
Backwashing every 30 minutes for 2 minutes	Backwashing every 30 minutes for 2 minutes	Backwashing every 50 minutes for 2 minutes

Chlorine, at 1.0 ppm, is added to the water prior to the membranes to extend the filter run times. The chlorine is fed from the same tank as the chlorine that goes out to the intake to control zebra mussels using two separate chemical feeder pumps.

The membranes normally operate in direct filtration mode but automatically operate in cross-flow filtration mode during periods of high solids in the raw water (turbidity > 15 ntu). This mode recycles a portion of the filtered water back to the influent water to each rack in order to reduce the solids load to the membranes.

Membrane Backwashing: Backwash of the membranes is done one rack (45 modules) at a time. The backwash consists of a reverse flow of filtered water through the membranes from the outside to the inside. The backwash cycle presently occurs every 80 minutes although the controls are programmed to increase the frequency to every 40 minutes at turbidities greater than 15 NTU and every 30 minutes when turbidities are greater than 50 NTU. The backwash water is pumped from the permeate tank by one of two Goulds 3196 horizontal centrifugal pumps, each with a capacity of 3082 gpm at 92 feet TDH and equipped with variable frequency drives. The normal 2-minute backwash cycle utilizes a 1 ppm chlorine feed and includes:

1. Forward flush (750 gpm for 10 seconds) with chlorine
2. Co-current flush (3120 gpm for 20 seconds) with chlorine
3. Counter-current flush (3120 gpm for 20 seconds)
4. Soak (60 seconds)
5. Rinse (3120 gpm for 10 seconds)

Chemical Cleaning of Membranes: Chemically enhanced backwashes (CEB) using 0.35 percent sodium hydroxide (pH=12.0) are performed based on the calculated temperature corrected specific flux, typically 2-3 times a day. The chemical feed injection points are located on the backwash feed line to each rack. The waste from all backwashes, normal and chemically enhanced, is directed to the WWTP via the surge tank.

Routine chemical cleaning of the membranes is required periodically and is also based on the calculated temperature corrected specific flux, never more than every 30 days. This cleaning is initiated manually by an operator. Two Rivers does not use the trans-membrane pressure (TMP) levels to determine cleaning times because they rarely exceed 4 psi. . The chemical cleaning system is isolated from the feed and permeate lines by a series of block and bleed valves. A delay in starting the cleaning is required to confirm that the rack is isolated from the feed and permeate headers. The operator confirms that the bleed valve on each line is open and is no longer draining before continuing with the cleaning. The cleaning cycle consists of a caustic wash (high pH) followed by a citric acid wash (low pH). Two 1500-gallon fiberglass chemical cleaning tanks are provided. One is designated for the acid wash and one for the caustic wash. Each is provided with two 60-kilowatt immersion heaters to heat the cleaning solutions to 104°F. Two Goulds 3196 horizontal end suction centrifugal pumps, each with a capacity of 720 gpm @ 58' TDH, circulate the cleaning solution. The cleaning cycle consists of filling the appropriate tank with water and citric acid or sodium hydroxide to achieve a pH of 2.5 or 12.5, respectively. Sodium hypochlorite is added to the sodium hydroxide solution to achieve a 50 ppm chlorine residual. After heating to 104°F, the solution is circulated to the feed side of the membranes and the rack soaks overnight. The next day the chemical cleaning continues with circulation to the feed side for 60 minutes followed by circulation to the product side for 60 minutes. The entire system is then rinsed twice and the conductivity checked prior to being placed back online. Without the overnight soak, the total time per cycle is about 250 minutes. The waste chemical solutions and rinse water is discharged to the WWTP via the surge tank.

Membrane Integrity Testing: Integrity testing is done by an air-pressure hold test. The source of the air is two air compressors located in the low lift pump room. The compressors are provided with pre-air filters, oil separator, and post air filters capable of 99.997% particulate removal. The test includes first removing one rack or unit (45 modules) from service.

Air is introduced into the upper feed manifold and water is drained from the feed side of the fibers before closing the drain valve. After venting the product side, the unit is pressurized to 16 psi, the air inlet valve closed and the pressure monitored on the upper feed manifold for 10 minutes. The pressure is displayed at 1-minute intervals and the decline monitored. Normal operation is 0.15 to 0.25 psi/min loss. A 0.5 psi/min loss triggers an alarm; however, the operator takes the rack off at 0.45 psi/min loss. A 0.87 psi/min loss triggers a shutdown of the rack until the operator can identify and correct the problem. The test is followed by a 30-second forward flush to rewet the membranes. This test allows the operator to identify even one broken fiber. The air-pressure hold test is done every 8 hours. If there is a failure of the air-pressure hold test, the next step involves a manually initiated test to visually check for bubbles in the clear permeate tubing. The problem module is isolated from service, removed from the rack, and placed in a test rig where the bad fiber can be detected and plugged. The module is then returned to the rack and the rack is retested.

Control of the operation of the membrane units is essentially automatic, with the master PLC controlling most of the normal functions. Some functions do require operator initiation and input.

The membrane modules are permanently removed from service once they have 400 pins. Since plant start-up, 50 membrane modules were replaced under warranty. Recently, the Utility replaced 100 modules with new ones. This will allow them greater flexibility to continue operating at full capacity while fiber repair is occurring.

Permeate Tank: The permeate water, from the membranes discharges, to the permeate tank. The two-chamber tank includes a common 5-foot by 3-foot access hatch. The inlets from the membrane racks allow for one of the chambers to be taken out of service. The 20-inch outlet line from each tank includes an upturned elbow with the rim at elevation 596.75. The water normally flows over the rim and into the pipe. Backwash water comes from the permeate tank. During backwashes, the water level in the permeate tank drops below the rim of the elbow while the outlet line remains pressurized. A common 24-inch line directs the water to the CT tanks. The tank is vented.

CT Tanks: Two identical CT tanks were created from the old flocculation basins. Normally, both tanks operate in parallel, but each can be taken out of service. Each tank is 24'-8" by 12'-0" with a concrete weir at the south end. The weirs are at an elevation of 596.67, which results in a water depth of 9.92 feet and a volume of 21,966 gallons per basin. Access hatches are provided for each tank. An 18-inch square opening between each weir effluent chamber and the clearwells serves as the outlets, which overflows into the clearwells.

The two CT tanks, each with a constant volume of 21,966 gallons, provides a hydraulic detention time of 21.1 minutes at a flow 3.0 MGD. The baffling provided for the CT tanks results in a baffling factor of 0.6 as determined by fluoride tracer testing which was performed on December 16, 2004 and approved on January 11, 2005. Therefore, at a flow rate of 3.0 MGD a T10 of 12.6 minutes is achieved, providing a CT sufficient for 4-logs of virus inactivation.

Log Removal Credits: The following table presents the log removal credits resulting from each treatment:

Treatment Process	Giardia	Viruses	Cryptosporidium
Membrane Filtration	3 <sup>1</sup>	0	3 <sup>1</sup>
Free Chlorine CT	0	4 <sup>2</sup>	0
Total Provided	3	4	3
Total Required	3	4	3 <sup>3</sup>

<sup>1</sup>Credit based on meeting IESWTR turbidity requirements (<0.1 NTU in 95% of the monthly samples and never exceeds 1.0 NTU)

<sup>2</sup>Credit based on meeting required CT values

<sup>3</sup>Bin 1

Clearwells: Two identical clearwell tanks were created from the old sedimentation basins. The floor elevation of the tanks is 580.25. Groundwater elevations are assumed similar to Lake Michigan water levels, which historically have ranged from a low of 576.8 to 582.3 with a mean of 580.0.

Due to site constraints, the Department allowed the conversion of these basins without a 2-foot buffer between the bottom of the finished water storage and the groundwater table. The construction allows for regular inspections. To date, no problems have been identified. Each tank is 61'-8" by 22' by 15.75' deep and provides a total of 319,675 gallons of potential storage. Each tank is provided with an access hatch.

Each basin is provided with a 20-inch outlet line that can direct the water to either of the high lift pump wet wells.

High Lift Pumps: Two, high-lift pump wet wells are provided. The floor elevation (578.75) of the suction well is similar to the clearwells. The construction of the wet wells allows required inspections to check for structural integrity and water tightness. To date no problems have been identified.

Three vertical turbine pumps, each with a capacity of 1400 gpm (2.0 MGD) at 160 feet TDH are provided. The pumps are provided with 75 HP motors with variable frequency drives. Space is provided for a fourth pump.

The common 18-inch discharge header includes a 12-inch mag meter before splitting into two, 16-inch lines out to the system.

Chemical Addition:

A powdered activated carbon (PAC) feed system is available for taste and odor control, if needed. The feed lines inject between the strainers and the low lift pumps, prior to the membranes. PAC can be fed at a maximum dose of 20 mg/l. The PAC system has not been needed since the membranes have been placed into service in November 2004.

Fluorosilicic acid (fluoride) is continuously added to the 24-inch line between the permeate tank and the CT tanks. The fluorosilicic acid is added to improve the dental health of the community. It is fed from a 25-gallon day tank and a 1000-gallon bulk tank. The chemical feeder pump is flow paced and is controlled by the metering at the total of each membrane rack. Secondary control is provided through the SCADA system continuously comparing the calculated consumption and the actual usage.

The Utility has recently reduced the feed rate for the fluoride in response to recent studies showing a dose of 0.7 ppm is more appropriate. Their existing pumps are adequate for the reduced dose.

Sodium hypochlorite is also continuously added to the 24-inch line between the permeate tank and the CT tanks. The sodium hypochlorite is fed as a disinfectant from 50-gallon day tanks and 1000-gallon bulk tanks. The chemical feeder pump is flow paced and is controlled by the metering at the total of each membrane rack. The sodium hypochlorite feed equipment and storage room comply with Department regulations.

Sodium hydroxide (caustic soda) is continuously added to the 20-inch lines between the clearwells and high lift pump wet wells when needed to control pH – typically following lake turnover to reduce corrosive conditions within the distribution system, which had previously resulted in an exceedance of the action level for lead. Bulk sodium hydroxide is stored in a 1000-gallon tank from which it is transferred to a 30-gallon day tank.

Sodium hypochlorite is also added in the distribution system at the north-side ground storage reservoir to boost chlorine residuals in the high zone. The feed point is after the booster pumps and is residual paced, with a minimum feed on the chemical feeder. The flow pace (20-4 mA signal) kicks on at a residual of 0.6 ppm and off at 1.2 ppm. Between these values, the pump continues at a 20 percent speed setting. The residual analyzer pulls water from the incoming service line.

Storage: Two, 500,000-gallon ellipsoid elevated storage tanks are located in the main zone and one 2,000,000 gallon ground storage reservoir is located in the high zone. The City maintains a long-term contract with Utilities Services for maintenance on their towers. The contract is for a visual inspection in year one and a drain and wash down in year two.

The East tower was constructed in 1935, was last painted inside and out in 2009, and was drained and inspected in 2011.

The South tower was constructed in 1943, was last painted inside and out in 2008 and was drained and inspected in 2010.

The 2,000,000-gallon north-side ground storage reservoir was constructed in 1963. The reservoir was taken off-line for an inspection in 1999. In 2005, the reservoir was inspected by divers and the Utility plans to conduct another dive inspection in 2011.

Booster Stations: The system is separated into two pressure zones with five check valves between the zones. The main zone is fed directly from the ultrafiltration plant at 63 psi and includes two, 500,000-gallon elevated storage tanks.

The north-side booster station feeds the high zone. This zone does not have any elevated storage, but the 2,000,000 gallon reservoir fills off the lower zone without the pressure in the zone going below 35 psi. The low zone can provide 40 psi to the high zone if the booster station is out of service. Two vertical turbine pumps with VFD's and capacities of 500 gpm each draw from the 2 million gallon ground storage reservoir and provide the high zone with a constant pressure of 75 psi. There is an additional vertical turbine pump that is a back up and only runs off of an auxiliary engine.

Auxiliary power: Auxiliary power is provided for the entire ultrafiltration plant by a diesel-fueled generator. This generator is rented and is routinely run under load. The north side ground storage reservoir/booster station has a natural gas-fueled generator to provide auxiliary power to operate the station at full capacity. This generator is exercised automatically under full load weekly.

Distribution System: The distribution system consists of 72 miles of metal water mains. Of this total, 31,056 feet (8%) has a pipe diameter of less than six inches. The City is aware of the possibility of limited fire flows in areas of small diameter mains. The Utility is replacing small diameter mains as they are encountered.

There are currently 2,607 lead services in the distribution system. There are no flow-through situations within the City.

The latest fire flow study was conducted in 2001 and does not reflect the existing system because the high pressure zone was not in place at the time. The current ISO rating for the City is a Class 4.

Two Rivers has an emergency interconnect with the City of Manitowoc. This connection is metered and Two Rivers usually takes about 400,000 gallons a year. The pressure valve in the vault opens when flushing occurs on this side of town. Manitowoc staff read the meter once a year and bills Two Rivers annually.

#### Water Quality Monitoring and Reporting

Your system has an adequate record of compliance with monitoring and reporting requirements. The most recent inorganic, organic and pesticide chemical analysis of the entry point to the distribution system indicates that the water meets all applicable drinking water standards. We appreciate your sampler's efforts in complying with these Safe Drinking Water Act requirements. This should continue to be given a high priority in the operation of your system.

Control of pH is monitored at the entry point tap continuously. The Utility is required to operate at a minimum pH of 8.6 as a result of recent lead control problems in their distribution system. The monitoring point is located after the injection of fluoride, chlorine and caustic soda.

Daily samples are analyzed for fluoride with concentrations typically being maintained around 0.9 ppm (reduced). Fluoride residuals are monitored continuously at the entry point and the monthly split samples are collected from the distribution system.

Free chlorine is recorded daily at the CT tank effluents, the entry point and at the 39<sup>th</sup> Street reservoir from continuous analyzers. The lowest daily value is reported on the monthly reports. In addition, free chlorine is recorded at each time a distribution system total coliform bacteria sample is collected. The Utility is not recording twice weekly free chlorine residual within the distribution system to confirm that there is a detectible residual throughout the distribution system. They have been relying on their residuals collected during the weekly bacti sampling.

The results from the 2011 sampling for lead and copper included 30 samples and shows the 90<sup>th</sup> percentile lead was 8.2 ppb and copper was 22 ppb. These levels are dependent on the addition of sodium hydroxide for pH adjustment, as the City had previously violated the action level for lead.

The City is required to collect 15 bacteriological water samples from the distribution system every month. Generally, four samples are collected weekly from a list of over 20 approved locations spread throughout the two pressure zones. The chlorine residual is always determined at the time of sample collection. Analyses are done in-house utilizing the Colilert method. In addition to bacteriological analysis within the distribution system, daily bacteriological testing is done at the entry point.

The current running annual average of the quarterly TTHM samples is 47.5 ppb and the HAA5 samples is 22.8 ppb. TTHM and HAA5 compliance sampling under EPA's Stage 2 Disinfectants and Disinfection Byproducts Rule (ST2 DBPR) will begin in October 2013.

Continuous turbidity monitors are provided on the raw water before and after the strainers, on the effluent from each rack, and at the entry point.

Particle counts are continuously being monitored on the effluent from each rack.

Cryptosporidium monitoring, as required by the Long-Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR), placed the City in Bin 1. The second round of LT2 sampling for Two Rivers must begin no later than October 1, 2015.

Calibration: Calibration of the particle counters, chlorine meters, and continuous turbidity meters is conducted by HACH under contract. North Central Labs maintains the fluoride meter.

#### Required Reports, Records, and Utility Programs

Waterworks staff has maintained an adequate record of completion and submission of monthly pumpage reports required by the Department. Records and documentation of all maintenance work and program implementation is available.

The system is looped appropriately and all dead-end mains are provided with appropriate flushing devices at their termination. In the past, the Utility had flushed water mains annually and more often at dead ends and when complaints are received. In 2009, only 62 of 614 hydrants were flushed. In 2010, only 56 of 641 were flushed. The Utility is attempting to flush the entire system yet in 2011. Appropriate records are being maintained.

Also in the past, the Utility was able to exercise and maintain approximately half of all valves located within the distribution system. In 2009, 54 of the 940 valves were operated. In 2010, 97 of 940 were operated. The Utility is also attempting to get caught up in 2011. Appropriate records are being maintained.

The City adopted a cross-connection control ordinance on January 8, 1981. In 2006, the City went to a 20-year meter replacement program. No cross-connection control surveys are being completed and the Utility has no written plan.

The City adopted a private well abandonment ordinance on October 7, 1991. All private wells are either abandoned (68) or issued a permit (300-400) as they are discovered. All known wells currently have updated operational permits. However, the City has not been requiring inspections when permits are renewed. They may address this deficiency by having experienced Utility staff conduct the inspection or will require well inspections by a licensed well driller or a licensed pump installer.

When necessary, Utility staff conduct meter testing of meters two-inches and smaller. All other meters are tested by B&D Meters. For large meters, the table below shows that the City continues to be out of compliance with ch. PSC 185. Wis. Adm. Code.

Meter Size	Testing Interval	Number of Meters	Number of Meters Tested			
			2008	2009	2010	2011
1.5-inch	4	39	16	1	0	0
2-inch	4	102	35	3	4	5
3-inch	2	26	4	0	0	0
4-inch	2	13	2	0	0	0
6-inch	1	1	1	0	1	0
10-inch	1	1	0	0	1	0
12-inch	1	1	0	0	1	0

The station meters were last tested in 2004, but the Utility plans to test the meters in 2011 and will continue to test them every two years.

The annual water loss over the last few years has continued to increase, with the last three years being 27, 19, and 15 percent. This exceeds the Department's recommended maximum allowable water loss of 10%. The average daily and maximum usage for 2010 was 1,337,100 gallons and 1,837,000 gallons. The City has 1,000,000 gallons in elevated storage and 2,000,000 gallons in boosted storage (with auxiliary power).

The Utility routinely sells bulk water by allowing customers to connect directly to a hydrant with a meter and backflow prevention supplied by the Utility. Waterworks staff is present to ensure cross connection control is provided.

#### Certified Operators

The City presently employs eight certified operators. Six are certified as S1, two as ST and three as D1 and two as DT. All operators receive continuing education. The Operator-In-Charge is Kevin Perry. On March 21, 2006, the Utility received approval from the Department to operate unmanned for two shifts a day. The facility is manned from 7-3 Monday through Friday and 7 am – 11 am on Saturday and Sunday. The Utility typically has 1-2 unmanned alarms each month that are responded to by on-call personnel. With the exception of soaking, chemical cleaning of the membranes does not occur during unmanned shifts.

#### Water System Security

All access hatches and doors at the plant, clearwell, booster station, towers, and reservoir are provided with locks, door guards, dusk to dawn lighting and entry alarms. Hatches to all water storage reservoirs are keyed differently than the doors. The City maintains an Emergency Response Plan, dated 2005 and revised 2011, but it is not routinely reviewed/exercised with staff. The City maintains an emergency sampling kit.

#### Capacity Development Evaluation

This sanitary survey serves as an evaluation of the capabilities of your water system. This system has been determined to have adequate technical, managerial, and financial capacity to provide safe drinking water because the ability to plan for, achieve, and maintain compliance with applicable drinking water standards has been demonstrated. The latest PSC rate increase of 27 percent took effect in August 2010.

### **Deficiencies and Recommendations**

Please respond by **December 1, 2011**, with notification that all significant deficiencies and deficiencies have been corrected, or a plan for correcting the significant deficiencies and deficiencies identified below. Your response shall also include a comment or plan for addressing each recommendation listed below.

#### **Significant Deficiencies Requiring Corrective Action**

During the course of the sanitary survey, one significant deficiency was identified. Significant deficiencies indicate noncompliance with one or more Wisconsin Administrative Codes and/or represent an immediate health risk to consumers. As such, the deficiency listed below should be corrected as soon as possible.

1. **Immediately** begin conducting cross connection control surveys in accordance with section NR 810.15, Wisconsin Administrative Code. By **December 1, 2011**, provide the Department with the details and time table for coming into compliance with this requirement. I have provided Mr. Perry with examples and references to be used in developing and maintaining the program. Training is available through Rural Water, WWA, and local technical schools at reasonable costs.

The City has many options available to complete this work: adopt an ordinance requiring all non-residential customers to hire a qualified person to conduct and document a survey at their facility and provide the documentation to the City (Utility staff would conduct and document residential surveys), hire a qualified contractor or plumber to conduct and document all surveys, have the City plumbing inspector conduct and document all surveys or some combination of these options.

#### **Deficiencies Requiring Corrective Action**

During the course of the sanitary survey, 12 deficiencies were identified. Deficiencies are problems in the drinking water systems that have the potential to cause serious health risks or represent long-term health risks to consumers. These deficiencies may indicate noncompliance with one or more Wisconsin Administrative Codes. Corrective action should be completed for these deficiencies as soon as possible.

1. In addition to the significant deficiency described above, by **January 1, 2011**, the City shall develop a written cross connection control plan. As described in s. NR 810.15, Wis. Adm. Code, the water supplier for every municipal water system shall develop and implement a *COMPREHENSIVE* cross connection control program for the elimination of all existing unprotected cross-connections and prevention of all future un-protected, cross connections **to the last flowing tap or end-use device**. The cross connection control program shall be a complete description of the program and the administration procedures, including a time schedule for public education materials, surveys and follow up surveys of consumer premises for cross connections including appropriate record keeping. An annual report including a total number of all service connections by category and a report indicating the number of surveys completed in each category for that year shall be submitted to the Department.

During the inspection, I discussed recent changes in our code that will allow the City greater flexibility in implementing a Cross Connection Control Program.

- a. For those communities with that meet the water loss requirements in s. PSC 185.76(6), Wis. Adm. Code, the survey frequency can match small meter replacement - meaning a reduction from once ever ten years to once every 20 years.
  - b. In lieu of surveying low risk portions (normal kitchen and bathroom fixtures) in residential or commercial facilities a water system can provide public education materials to the owner at the time of the survey and every three years thereafter. However, you will need to submit a copy of your program to me before you can begin implementing it.
  - c. Commercial, Industrial and Public Authority customers/structures are required to be surveyed every two years, unless the initial survey shows the risk or extent of the plumbing to be no more complex than a residential structure – in which case the survey frequency can be the same as that of a residence. For example, an industry that does not use water in their process and only has water service to bathrooms, kitchen and outside hose bibbs. It is logical for this customer to be on the same survey frequency as a residential customer. However, you cannot implement this until you have a written process which clearly identifies which customers this would apply.
2. **Immediately** begin reporting the daily low for the fluoride residual at the entry point to the distribution system on the monthly report and begin investigating the cause of the daily variation in the fluoride residuals. Review of the four most recent monthly reports shows the max, min and average throughout the month vary by up to .5 units. As discussed during the inspection, review the sampling and testing process with staff and also check the source of the signal to the chemical feeder pump and confirm that it is based off of the actual flow past the fluoride injection point.
  3. **Immediately** begin reporting the daily low for the pH at the entry point to the distribution system on the monthly report and begin investigating the cause of the daily variation in the pH levels. In the past the value on the monthly reports was recorded each morning and the daily trend was never evaluated. The City must continuously operate above the minimum pH of 8.6. While on site, I noted the pH leaving the plant was 8.1. While this may have been a short-term issue resulting from the manual operation of the chemical feeder pump, the Utility shall confirm this was the case and ensure it doesn't continue to happen.
  4. **Immediately** begin testing and reporting the chlorine residual at the limits of your distribution system to confirm a detectible chlorine residual (s. NR 809.09(2), Wis. Adm. Code). This shall be added to your monthly report form.
  5. **Immediately** install gaskets on all reservoir hatches. This includes the CT tanks, clearwell and 39<sup>th</sup> Street Reservoir.
  6. **By June 1, 2012**, conduct a dry inspection of the 39<sup>th</sup> Street reservoir. The reservoir was last inspected in 1999 by diving. Water storage facilities must be inspected at least once every 5 years, with drain down inspections utilized a minimum of every ten years, or every other inspection (s. NR 810.14, Wis. Adm. Code).
  7. **By June 1, 2012**, the City shall conduct fire flow testing throughout the distribution system targeting all areas with four-inch water mains, areas of old cast iron pipe (to determine if corrosion is limiting flow), dead ends and areas identified in previous reports.

The results shall be sent to me once the work has been completed. The latest fire flow study information is dated 2001 and this report identified several areas that had inadequate residual pressures. In addition the City has over 30,000 feet of four-inch water main in the distribution system. If the results show that any of the hydrants cannot meet the 500 gpm and 20 psi residual pressure requirements found in s. NR 810.11, Wis. Adm. Code, the City shall immediately notify the fire chief, in writing, which fire hydrants cannot meet the requirements and also color code or tag the hydrants. A copy of your letter to the fire chief, if necessary, shall also be sent to me.

8. **Immediately** begin a meter testing program as required in s. PSC 185.76, Wis. Adm. Code. Uncalibrated meters can be a significant source of unaccounted water. While you are not required to test small meters while on the 20-year meter replacement program, records available at the time of the inspection showed that there is no meter testing program for meters larger than one-inch. Meter testing completed in the last few years is insufficient.
9. Despite the recent repairs to long-term water leaks, the City's water loss continues to remain high. In 2008 lost water was at 13 percent; in 2009 it reached 19 percent and in 2010 it worsened to 27 percent. The result of this reaches beyond the lost revenue and can affect your ability to remain on a 20-year meter replacement program, which will then cause the City to drop down to a 10-year inspection frequency for cross-connection control surveys (rather than the 20-year cycle). Mr. Perry explained that the City hired a leak detection company in 2010 and they were successful in locating 5 leaks. He said that this company will be returning in October to continue their work. The Department expects the City to follow through with this commitment. The City should be doing everything possible to reduce the amount of lost water.
10. **Immediately** begin conducting a valve exercising and hydrant flushing program that meets the requirements of s. NR 810.13(2), Wis. Adm. Code. While the Department understands that a significant investment of time and money has been recently been made to address lead problems in the distribution system, it is time to refocus on routine maintenance.
11. By **November 15, 2011**, develop, and submit, for approval, an emergency chlorination plan as required in s. NR 810.26(8), Wis. Adm. Code. The emergency chlorination plan must include the steps necessary in order to achieve a 0.5 ppm free chlorine level at the limits of the distribution system within 4 hours of receiving notice of a confirmed total coliform positive sample. The most logical place to store this document is in your Emergency Response Plan.
12. The City shall continue to conduct routine inspections at the clear well and high lift pump wet wells to confirm water tightness of these structures. The inspections should occur no less frequently than every five years.

### **Recommendations**

During the course of the sanitary survey, two recommendations were identified. Recommendations are problems in the water system that hinder your public water system from consistently providing safe drinking water to consumers.

1. To increase system reliability, the Department continues to recommend that the City plan for an additional raw water intake line to be installed.

2. Security issues pertaining to drinking water supplies have long been a concern in the assurance of a safe supply of water. The City is encouraged to continue addressing security issues whenever practical.

Please review this report for accuracy. If there are changes that need to be made, please contact me in order to make the corrections.

In accordance with Wisconsin Statutes, plans and specifications for all modifications or additions to the water supply shall be prepared by a registered engineer and approved by the Department prior to construction and installation.

Respectfully submitted,

A handwritten signature in cursive script that reads "Wendy Anderson". The signature is written in black ink and has a fluid, connected style.

Wendy Anderson, P. E.  
Water Supply Engineer