

APPENDIX A

USER CHARGE SYSTEM

City of Menasha, Wisconsin

The User Charge System (UCS) is intended to provide for an equitable distribution of the debt retirement costs, operation and maintenance (O & M) costs, and replacement costs of the wastewater collection system and Neenah-Menasha Sewerage Commission (NMSC) wastewater treatment plant (WWTP). The distribution of variable sewer user charges shall be based on the volume and strength of wastewater discharged to ensure a proportional distribution of costs to each sewer user.

The wastewater discharges in 2008 and revenue requirements budgeted for 2010 were used to establish the sewer user charges. The City should review, at least every two (2) years, the sewer user charges in order to maintain proportionate distribution of costs and to generate sufficient revenue.

The City of Menasha shall notify each sewer user, in conjunction with a regular bill, when user charge rates change.

Methodology of Distributing User Charges

The Sewer Use Ordinance has established two user classes:

- Domestic-Strength Wastewater
- High-Strength Wastewater

Domestic-Strength Wastewater shall mean wastewater discharged from residential sewer users, exclusive of infiltration and inflow. Residential sewer users can include commercial and industrial businesses that discharge only restroom wastewater. The biochemical oxygen demand (BOD₅) concentration and suspended solids concentration of domestic-strength wastewater is established in this UCS.

High-Strength Wastewater shall mean wastewater discharged from non-residential significant sewer users, exclusive of infiltration and inflow. The BOD₅ concentration and suspended solids concentration of high-strength wastewater is determined from periodic monitoring of the dischargers.

This UCS shall generate all debt retirement, operation, maintenance, and replacement revenue for providing sewer service. The revenue shall cover the expenses for collection system O & M, collection system debt service, NMSC sewer rates, and collection and administrative costs. Administrative costs shall also include outside services, whenever necessary. The NMSC sewer rates include debt retirement, O & M costs, and replacement costs for the NMSC WWTP. The UCS will include revenue for the sewer rehabilitation work planned in the Phase 1 and Phase 4 SSES areas.

A summary of the wastewater flows and loadings discharged by the City of Menasha to the NMSC WWTP in 2008 is presented in Table 1. The flows and loadings for 2008 were selected as the basis of the 2009 UCS update because BOD₅ and suspended solids loadings for 2009 are not considered representative of current conditions. The unit treatment charges from the NMSC 2010 Budget used in this UCS update will be \$0.291 per pound BOD₅ and \$0.135 per pound suspended solids.

Table 1 Flows and Loadings, 2008

Month	Flow, mg	BOD ₅ Loading, lbs	Suspended Solids Loading, lbs
January	89.539	93,721	121,946
February	63.037	70,972	107,179
March	130.129	89,668	207,884
April	185.961	79,972	159,957
May	94.806	93,507	139,048
June	146.353	101,369	127,434
July	109.047	97,371	169,086
August	75.473	95,588	156,562
September	56.173	105,333	153,880
October	54.904	107,129	125,857
November	50.690	94,604	117,736
December	58.264	146,675	101,989
TOTAL	1,114.376	1,175,909	1,688,558

O & M costs will be recovered through fixed and volume charges. A summary of the 2010 O & M cost budget is summarized in Table 2. The NMSC costs are based on their recently completed 2011 budget.

Table 2 Distribution of Budget Costs to Fixed and Variable (Volume) Charges

Item	Cost, Dollars
Fixed Charge (Distribute to UCME)	
Insurance	2,900
Tools and Equipment	4,300
Capital Outlay	
CWF Loan P&I (CWF #5101-02)	63,100
CWF Loan P&I (CWF #5101-03)	165,000
CWF Loan P&I for future Phase 1/Phase 4 Rehabilitation	170,000
City Replacement Fund	27,000
Capital Outlay (NMSC)	167,000
Construction - Capital Outlay	
Lateral Repair/Rehabilitation	20,000
Manhole Reconstruction/Rehabilitation	15,000
Miscellaneous Sewer Repair/Rehabilitation	20,000
I/I Home Grant Program	50,000
TOTAL FIXED CHARGE	704,300
Variable (O & M)	
Labor	245,200
Vehicle and Equipment Rental	44,000
Supplies	19,000
Telephone/Pagers	3,200
Meeting and Mileage	0
Postage	1,000
Printing	200
Electricity	2,100
Water/Sewer	2,000
Professional Services	106,000
Outside/Contract Services (Menasha Utility billing)	174,600
Replacement (NMSC)	63,700
Depreciation (NMSC)	46,000
Operations - Administration (NMSC)	728,300
Repair/Maintenance Specialized Equipment	3,000
TOTAL	1,438,300

The fixed user costs will recover revenue for the annual Clean Water Fund (CWF) loan payments for the Phase 2 and Phase 3 Wastewater Collection System Rehabilitation Improvements; estimated CWF loan payment for the sewer rehabilitation in the Phase 1 and Phase 4 SSES areas; capital outlay, City replacement fund; insurance expense; and tools and equipment expense. The fixed charges will be recovered from wastewater dischargers according to their user charge meter equivalents (UCME) based on water meter size or size of effluent wastewater meter. The City billed a total of 5,818.2 UCMEs in 2008 and 5,789.6 UCMEs in 2009. The UCMEs in 2009 will be used in this update.

The volume charge will include variable O & M costs including labor, professional services, outside/contract services for billing, NMSC operations-administrative expenses, and replacement and depreciation costs billed by NMSC. The volume charge will be recovered from domestic strength dischargers based on water used and discharged to the sanitary sewer. The volume charge will be recovered from significant sewer users (wastewater discharge with concentrations of BOD₅ and suspended solids greater than domestic strength) based on volume of wastewater discharged and loadings greater than domestic strength. Volume shall be determined from water use or wastewater metering.

Fixed Meter Charge Calculation

The total fixed costs \$704,300 are divided by the number of UCMEs to determine the annual fixed charge per UCME. Following is a summary of the fixed user charge calculation.

Fixed Cost Distributed to UCME	\$704,300
Number of UCMEs	5,789.6
Fixed Charge/UCME	
= \$704,300 ÷ 5,789.6 UCMEs =	\$121.65/yr (\$10.14 month)

Volume User Charge Calculation

The volume user charge will recover revenue for variable O & M costs of \$1,438,300. The volume user charge will include a volume charge per 1,000 gallons for domestic strength wastewater and a surcharge for BOD₅ and suspended solids greater than domestic strength.

Significant Sewer Users. The significant sewer users having high strength wastewater were monitored to determine the volume of wastewater, BOD₅ loadings greater than domestic strength, and suspended solids loadings greater than domestic strength. The Water Treatment Plant discharged 7,268 pounds of BOD₅ and 402,438 pounds of suspended solids in 2008. The user charge for the Water Treatment Plant includes a transportation charge for wastewater flow, and loading charges based on the NMSC unit charges. The total loadings to the NMSC in 2008, excluding the Water Treatment Plant, was 1,168,641 pounds BOD₅ and 1,286,120 pounds suspended solids. A summary of the high strength dischargers is presented in Table 3.

Table 3 Summary of High Strength Dischargers

<u>BOD₅ > Domestic</u>	<u>Million Gallons per Year</u>	<u>Pounds per Year</u>
Intertape Polymer Group	2.821	39,023
Alcan Packaging	5.988	21,627
Graphic Packaging	1.106	5,565
Whiting Paper Company	56.224	247,215
Albany International	<u>0.221</u>	<u>974</u>
TOTAL	66.360	314,404

<u>Suspended Solids > Domestic</u>	<u>Million Gallons per Year</u>	<u>Pounds per Year</u>
Dura Fibre	1.591	11,636
Mondi Packaging	17.438	88,907
Graphic Packaging	<u>1.106</u>	<u>7,191</u>
TOTAL	20.135	107,734

Calculation of Domestic Strength Wastewater Characteristics

The total volume of water discharged to sanitary sewer in 2008 was 333,472,000 gallons (225,699,000 gallons of water use billed by utility + 4,449,000 gallons of water use by minor dischargers billed by City + 103,324,000 gallons of wastewater flow from significant industrial dischargers). The domestic strength BOD₅ and suspended solids concentrations are calculated using the domestic strength loadings (total minus significant loadings) and water use for domestic strength dischargers (total minus significant sewer user water use or wastewater flow). The calculations of the domestic strength concentrations for BOD₅ and suspended solids are as follows:

$$\text{BOD}_5 \quad (1,168,641 \text{ lbs/yr.} - 314,404 \text{ lbs/yr.}) \div (8.34 \times 267.112 \text{ million gallons}) \\ = 384 \text{ mg/l}$$

$$\text{SS} \quad (1,286,120 \text{ lbs/yr.} - 107,734 \text{ lbs/yr.}) \div (8.34 \times 313.337 \text{ million gallons}) \\ = 451 \text{ mg/l}$$

The volume charge for domestic strength dischargers is calculated by first determining the surcharge revenue that will be collected for BOD₅ and suspended solids loadings from significant sewer users with BOD₅ and suspended solids greater than domestic strength.

$$\text{BOD}_5 \quad 101,881 \text{ lbs/yr.} \times \$0.291/\text{lb} = \$29,647$$

$$\text{SS} \quad 32,000 \text{ lbs/yr.} \times \$0.135/\text{lb} = \$4,320$$

$$\text{TOTAL} = \$33,967$$

The annual charges to the Water Treatment Plant for flow, BOD₅ and suspended solids treatment, and flow transportation were \$63,469 in 2009. The annual transportation charges for Sonoco were \$40,089 in 2009. These revenues can be used to reduce the flow revenue required from sewer users.

The balance of revenue, obtained with unit volume cost, is calculated as follows:

$$\text{Flow Revenue Required} = \$1,438,300 - \$33,967 - \$63,469 - 40,089 \\ = \$1,300,775$$

$$\text{Flow Unit Charge} = \$1,300,775 \div 333,472,000 \text{ gallons} \\ = \$3.90/1,000 \text{ gal.}$$

The Water Treatment Plant will be billed for the total flow, and BOD₅ and suspended solids loadings discharged. The billing will be based on the actual NMSC unit charges in affect when the Water Treatment Plant is billed.

The significant sewer users will be surcharged for treatment of wastewater with BOD₅ and suspended solids loadings greater than domestic strength at the actual NMSC unit charges in affect when the significant sewer users are billed. The BOD₅ and suspended solids surcharges are as follows.

BOD₅ Surcharge

BOD₅ Unit Loading > 3.20 lbs/1,000 gallons

Suspended Solids Surcharge

Suspended Solids Unit Loading > 3.76 lbs/1,000 gallons

Comparison of Existing and Proposed Rates

The following is a comparison of sewer user rates for a residential customer with a 3/8-inch or 3/4-inch meter and 50,000 gallons water use per year:

Existing Rate (Adopted in 2006)

Vol. Charge = \$2.90/1,000 x 50,000 gallons
= \$145.00/yr.

Fixed Charge = \$84.60/yr. (\$7.05/mo.)

TOTAL = \$229.60/yr.

Estimated Rate including 2011-2012 Sewer System Rehabilitation Program

Vol. Charge = \$3.90/1,000 gal. x 50,000 gallons
= \$195.00

Fixed Charge = \$121.68/yr. (\$10.14/mo.)

TOTAL = \$316.68/yr. 37.9% increase

Staging of User Charge Increases

The user charge increases could be implemented in Stages to reduce the impact on the sewer users. The first increase would be in October of 2010. This increase would balance the revenue with current expenses. The fixed user charge for a residential sewer user would be increased from \$7.05 to \$8.60 per month and the volume charge would be increased from \$2.90 to \$3.75 per 1,000 gallons. The annual charge, based on 50,000 gallons per year water use, would be increased from \$229.60 to \$290.70.

The Phase 4 Sewer System Rehabilitation Work on the island will be divided into Phase 4 and Phase 5 projects to reduce sewer rate increases. Each project is estimated to cost approximately \$1 million. Phase 4 Sewer System Rehabilitation Work is expected in 2011 and Phase 5 Sewer System Rehabilitation Work is expected in 2012.

The second increase would be in July of 2011 when the Stage 4 Sewer System Rehabilitation project is funded with a low interest loan (2.4%) from the Wisconsin Clean Water Fund (CWF). The monthly debt load (principal and interest (P&I)) is estimated to increase fixed costs by \$7,100 per month. The fixed user charge for a residential sewer user would be increased from \$8.60 to \$10.20 per month and the volume charge would be increased from \$3.75 to \$3.90 per 1,000 gallons. The annual charge, based on 50,000 gallons per year water use, would be increased from \$290.70 to \$317.40.

The third increase would be in July of 2012. The increase is intended to provide revenue for the Phase 5 Sewer System Rehabilitation project and to increase the balance in the sewage fund. The increased balance could be used to pay back legal fees associated with the PCB issue to the City's General Fund. The Phase 5 Sewer System Rehabilitation project would be funded with a low interest loan from the CWF. The monthly debt load (P&I) is estimated to increase fixed costs by \$7,100 per month. The fixed user charges for a residential user would be increased from \$10.20 to \$11.70 per month, and the volume charge would be increased from \$3.90 to \$4.40 per 1,000 gallons. The annual charges, based on 50,000 gallons per year water use, would be increased from \$317.40 to \$360.40.

A summary of the staged increase in sewer user charges is presented in Table 4. A summary of the Sewage Fund cash flow (not including the current balance of approximately \$130,000) is presented in Table 5. The 2011 NMSC budget is used for setting expenses for the entire period. No cost inflation is included. The cash flow was developed assuming the existing CWF loan payments are divided evenly throughout the year.

Table 4 Preliminary Staging of UCS Increases

Stage	Unit Charges		Annual Residential User Charge		
	Fixed, \$/month(a)	Volume, \$/1,000 gal	Fixed(a)	Volume(b)	Total
Existing	7.05	2.90	84.60	145.00	229.60
Stage 1	8.60	3.75	103.20	187.50	290.70
Stage 2	10.20	3.90	122.40	195.00	317.40
Stage 3	11.70	4.40	140.40	220.00	360.40

(a)Fixed charge for 3/4" or 3/4" meter

(b)Volume charge for 50,000 gal/year water use

Table 5 Sewage Fund Cash Flow

Month	Expenses(a)	Revenue(a)	Sewer Fund Balance
September 2010	164,400	132,900(b)	(31,500)
October	164,400	165,500(c)	(30,400)
November	164,400	165,500	(29,300)
December	164,400	165,500	(28,200)
January 2011	164,400	165,500	(27,100)
February	164,400	165,500	(26,000)
March	164,400	165,500	(24,900)
April	164,400	165,500	(23,800)
May	164,400	165,500	(22,700)
June	164,400	165,500	(21,600)
July	171,500(d)	178,900(e)	(14,200)
August	171,500	178,900	(6,800)
September	171,500	178,900	(600)
October	171,500	178,900	8,000
November	171,500	178,900	15,400
December	171,500	178,900	22,800
January 2012	171,500	178,900	30,200
February	171,500	178,900	37,600
March	171,500	178,900	45,000
April	171,500	178,900	52,400
May	171,500	178,900	59,800
June	171,500	178,900	67,200
July	178,600(d)	201,500(f)	90,100
August	178,600	201,500	113,000
September	178,600	201,500	135,900
October	178,600	201,500	158,800
November	178,600	201,500	181,700
December	178,600	201,500	204,600
January 2013	178,600	201,500	227,500
February	178,600	201,500	250,400
March	178,600	201,500	273,300
April	178,600	201,500	296,200
May	178,600	201,500	319,100
June	178,600	201,500	342,000
July	178,600	201,500	364,900

(a) Assumed equal monthly expense/revenue

(b) Existing rates

(c) Stage 1 UCS increase

(d) 50% Phase 4 SSES/Rehab (\$7,100/month debt cost)

(e) Stage 2 UCS increase

(f) Stage 3 UCS increase

COMPARISON OF RESIDENTIAL SEWER USER CHARGES

Community	Est. 2009 Population	Annual Cost, Dollars			Effective Date
		Fixed(a)	Variable(b)	Total	
Village of Bonduel	1,440	360.60	399.00	759.60	1/1/04
Village of Pound	336	353.56	338.50	692.06	3/30/10
Village of Cleveland	1,416	445.92	234.50	680.42	3/26/10
Village of Wrightstown	2,677	168.00	507.50	675.50	12/16/08
Village of Mishicot	1,448	381.60	291.00	672.60	
City of Marion	1,247	225.76	400.00	625.76	
Village of Black Creek	1,272	388.00	225.50	613.50	
City of Columbus	4,932	187.20	358.29	545.49	1/1/08
Little Suamico Sanitary District No. 1	380(c)	540.00		540.00	
Village of Valders	997	220.00	315.00	535.00	
Village of Algoma	3,387	144.00	386.50	530.50	
Village of Suamico	(d)	260.80	265.50	526.30	1st Qtr. 2010
Village of Wausaukee	556	277.28	225.00	502.28	
Village of Egg Harbor	284/2,100(g)	500.00		500.00	
City of Oconto Falls (proposed)	2,924	288.00	210.00	498.00	
City of Kaukauna	14,990	36.00	401.07	437.07	
Village of Combined Locks	3,086	112.00	312.50(f)	424.50	1/1/08
Village of Hortonville	2,740	102.00	315.00	417.00	
City of Waupaca	6,157	254.04	161.50	415.54	2009
City of Fond du Lac	43,600	150.00	261.36	411.36	1/1/10
City of Two Rivers	12,570	113.16	291.00	404.16	1/18/10
Village of Luxemburg	2,386	137.64	266.50	404.14	
Village of Suring	559	154.32	243.00	397.32	1/1/09
City of Shawano	9,008	105.00	289.00	394.00	
City of Manawa	1,301	177.44	205.50	382.94	
City of Oconto	4,757	236.00	133.50	369.50	
Village of Little Chute	11,040	36.00	332.50	368.50	2/1/09
City of Clintonville	4,635	153.00	195.00	348.00	
Darboy Sanitary District	4,200(c)	96.92	249.50	346.42	7/1/09
City of Weyauwega	1,871	202.20	137.50	339.70	
City of Antigo	8,677	85.20	247.50	332.70	1/09
City of Marinette	11,320	180.00	127.00	307.00	6/10/10
Village of Denmark	2,148	102.76	202.50	305.26	3/15/09
City of Berlin	5,309	85.04	211.90	296.94	
Greenville Sanitary District	--	96.00	197.50	293.50	
City of Brillion	2,986	140.00	144.50	284.50	
Village of Sherwood	2,542	189.00	93.50	282.50	
City of Chilton	3,797	132.00	145.00	277.00	
City of Stevens Point	26,200	96.00	176.47	272.47	
Village of Pulaski	3,475	132.00	140.00	272.00	
City of Neenah	25,800	165.00	100.50	265.50	1/1/10
City of Kiel	3,667	141.60	121.50	263.10	10/14/03
Waverly Sanitary District	1,813(c)	105.60	157.50	263.10(e)	prior to 6/06
City of Seymour	3,485		258.50	258.50	
City of New London	7,202	--	257.00	257.00	
City of Gillett	1,225	61.92	173.00	234.92	3/15/07
Town of Menasha	8,200(c)	30.84	201.50	232.34	1/1/10
City of Menasha	17,437	84.60	145.00	229.60	9/06
City of Manitowoc	34,700	94.68	131.00	225.68	1/1/10
Town of Grand Chute	--	139.36	68.40	207.76	1/1/10
City of Oshkosh	65,900	53.56	151.73	205.29	7/27/04
City of Appleton	72,400	52.40	129.00	181.40	10/1/05

(a)Fixed charge based on 3/8-inch meter

(b)Volume charge based on 50,000 gal/yr. consumption

(c)Number of customers

(d)Sewer service to portion of village

(e)Sanitary District has tax levy of \$0.50/\$1,000 for sewer service in addition to user charge

(f)Volume charge shown is winter rate of \$6.25/1,000 gals. Summer rate is \$5.40/1,000 gals.

(g)Winter/summer population