

Cost of Service Study

Ohio County Water District

Prepared

By

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Kentucky Rural Water Association

OHIO COUNTY WATER DISTRICT

TEST YEAR BILLING ANALYSIS

USAGE TABLE

	Bills	Gallons	2,000	18,000	30,000	50,000	100,000
First 2,000	14,782	12,500,000	12,500,000				
Next 18,000	44,071	215,431,300	88,142,000	127,289,300			
Next 30,000	580	15,184,900	1,160,000	10,440,000	3,584,900		
Next 50,000	135	9,429,400	270,000	2,430,000	4,050,000	2,679,400	
Over 100,000	82	19,276,400	164,000	1,476,000	2,460,000	4,100,000	11,076,400
Total	59,650	271,822,000	102,236,000	141,635,300	10,094,900	6,779,400	11,076,400

REVENUE TABLE

	Bills	Gallons	Rate	Revenue			
First 2,000	59,650	102,236,000	17.23	\$ 1,027,770			
Next 18,000		141,635,300	7.55	1,069,347			
Next 30,000		10,094,900	6.56	66,223			
Next 50,000		6,779,400	5.56	37,693			
Over 100,000		11,076,400	4.58	50,730			
Total	59,650	271,822,000		\$ 2,251,762			
Leak Adjustments		12,000,000	1.53	\$ 18,360			
Wholesale Sales							
Beaver Dam		103,815,121	1.53	\$ 158,837.14			
Fordsville		12,812,115	1.53	19,602.54			
North McLean		7,701,800	1.53	11,783.75			
Total Wholesale		124,329,036		\$ 190,223.43			
Total Test Year Revenue				\$ 2,460,345			

OHIO COUNTY WATER DISTRICT

NORMALIZED TEST YEAR BILLING ANALYSIS

USAGE TABLE

	Bills	Gallons	2,000	18,000	30,000	50,000	100,000
First 2,000	14,782	12,500,000	12,500,000				
Next 18,000	44,851	219,318,040	89,702,000	129,616,040			
Next 30,000	580	15,184,900	1,160,000	10,440,000	3,584,900		
Next 50,000	135	9,429,400	270,000	2,430,000	4,050,000	2,679,400	
Over 100,000	82	19,276,400	164,000	1,476,000	2,460,000	4,100,000	11,076,400
Total	60,430	275,708,740	103,796,000	143,962,040	10,094,900	6,779,400	11,076,400

REVENUE TABLE

	Bills	Gallons	Rate	Revenue			
First 2,000	60,430	103,796,000	\$ 17.23	\$ 1,041,209			
Next 18,000		143,962,040	7.55	1,086,913			
Next 30,000		10,094,900	6.56	66,223			
Next 50,000		6,779,400	5.56	37,693			
Over 100,000		11,076,400	4.58	50,730			
Total	60,430	275,708,740		\$ 2,282,768			
Leak Adjustments		12,000,000	1.53	\$ 18,360			
Wholesale Sales							
Beaver Dam		103,815,121	1.53	\$ 158,837.14			
Fordsville		12,812,115	1.53	19,602.54			
North McLean		7,701,800	1.53	11,783.75			
Total Wholesale		124,329,036		\$ 190,223.43			
Total Normalized Revenue				\$ 2,491,352			

Note: Added 65 new customers at an average usage of 4,983 gallons per month

OHIO COUNTY WATER DISTRICT		
TOTAL WATER PRODUCED AND SOLD		
	Gallons	Percentage
Total Water Produced	597,954,000	
Sales to Retail	287,708,740	48.12%
Sales to Wholesale	124,329,036	20.79%
Plant Use, Backwash, Flushing	126,323,128	21.13%
Total Accounted for Water	538,360,904	
Line Loss	59,593,096	9.97%

OHIO COUNTY WATER DISTRICT

ALLOCATION OF PLANT VALUE

		Pumping and Treatment	Transmission and Distribution	Customer
Land and Land Rights	\$ 110,681	\$ 5,420	\$ 105,261	
Structures and Improvements	1,202,642	981,206	221,436	
Collecting and Impounding Res.	635,558	635,558		
Lakes, Rivers, and Other	74,575	74,575		
Pumping Equipment	317,307	158,654	158,654	
Treatment Equipment	360,674	360,674		
Reservoirs and Standpipes	3,026,462		3,026,462	
Transmission and Dist. Mains	10,823,758		10,823,758	
Meters and Installations	747,156			747,156
Hydrants	20,940			20,940
Other Plant and Misc.	416,747		416,747	
Subtotal	\$ 17,736,500	\$ 2,216,087	\$ 14,752,318	\$ 768,096
Percentage		0.1249	0.8317	0.0433
General Plant				
Organization	8,245	1,030	6,858	357
Franchises	1,000	125	832	43
Office Furniture and Equip.	54,896	6,859	45,660	2,377
Transportation Equip.	168,756	21,085	140,363	7,308
Power Operated Equip.	123,395	15,418	102,634	5,344
Communication Equip	32,875	4,108	27,344	1,424
Miscellaneous Equip.	37,599	4,698	31,273	1,628
Land and Land Rights	37,303	4,661	31,027	1,615
Structures and Improvements	58,229	7,275	48,432	2,522
Total	\$ 18,258,798	\$ 2,281,345	\$ 15,186,739	\$ 790,715
Percentage	1.00	0.1249	0.8317	0.0433

Numbers taken from 2001 Annual Report and percentages used to allocate debt service.

OHIO COUNTY WATER DISTRICT

ALLOCATION OF DEPRECIATION

		Pumping and Treatment	Transmission and Distribution	Customer
Structures and Improvements	\$ 28,663	\$ 28,663		
Lakes, Rivers, and Other	16,943	16,943		
Pumping Equipment	5,208	5,208		
Treatment Equipment	12,186	12,186		
Hydrants	428			428
Reservoirs and Standpipes	72,308		72,308	
Transmission and Dist. Mains	207,488		207,488	
Tank Painting	21,580		21,580	
Base Period Acquisitions	86,032		86,032	
Meters and Installations	24,724			24,724
Other Plant and Misc.	44,922		44,922	
Subtotal	\$ 520,482	\$ 63,000	\$ 432,330	\$ 25,152
Percentage		0.1210	0.8306	0.0483
Organization and Franchises	231	28	192	11
Transportation Equip.	13,623	1,649	11,316	658
Power Operated Equip.	5,868	710	4,874	284
Land and Land Rights	105	13	87	5
Total	\$ 540,309	\$ 65,400	\$ 448,799	\$ 26,110
Percentage		0.1210	0.8306	0.0483

	<i>Beaver Dam</i>				<i>North McLean County Water District</i>					
	<i>Primary System, Ft</i>	<i>Secondary System, Ft</i>	<i>Miles</i>	<i>IDM</i>	<i>Primary System, Ft</i>	<i>Secondary System, Ft</i>	<i>Miles</i>	<i>IDM</i>		
18			-	-			-	-		
16	19,900.00		3.77	60.30			-	-		
12			-	-			-	-		
10	49,300.00		9.34	93.37	4,700.00		0.89	8.90		
8	64,100.00	41,800.00	20.06	160.45	61,200.00	162,100.00	42.29	338.33		
6		13,200.00	2.50	15.00	15,100.00	59,700.00	14.17	85.00		
4		11,300.00	2.14	8.56	39,900.00	61,400.00	19.19	76.74		
3			-	-	11,300.00	17,300.00	5.42	16.25		
2			-	-		10,500.00	1.99	3.98		
1			-	-			-	-		
	133,300.00	66,300.00	37.80	337.69	132,200.00	311,000.00	83.94	529.20		
	<i>Fordsville</i>				<i>Grayson County Water District</i>					
	<i>Primary System, Ft</i>	<i>Secondary System, Ft</i>	<i>Miles</i>	<i>IDM</i>	<i>Primary System, Ft</i>	<i>Secondary System, Ft</i>	<i>Miles</i>	<i>IDM</i>		
18	30,300.00		5.74	103.30			-	-		
16	51,300.00		9.72	155.45			-	-		
12	47,900.00		9.07	108.86			-	-		
10	1,600.00		0.30	3.03			-	-		
8		72,300.00	13.69	109.55			-	-		
6	89,900.00	20,000.00	20.81	124.89	48,500.00		9.19	55.11		
4	37,100.00	27,419.00	12.22	48.88	3,400.00		0.64	2.58		
3	10,900.00	47,500.00	11.06	33.18			-	-		
2		5,100.00	0.97	1.93			-	-		
1			-	-			-	-		
	269,000.00	172,319.00	83.58	689.07	51,900.00	-	9.83	57.69		
TOTAL SHARED MAIN										
	<i>Primary System, Ft</i>	<i>Secondary System, Ft</i>	<i>Miles</i>	<i>PRIMARY IDM</i>	<i>SECONDARY IDM</i>	<i>TOTAL IDM</i>				
18	30,300.00	-	5.74	103.30	-	103.30				
16	71,200.00	-	13.48	215.76	-	215.76				
12	47,900.00	-	9.07	108.86	-	108.86				
10	55,600.00	-	10.53	105.30	-	105.30				
8	125,300.00	276,200.00	76.04	189.85	418.48	608.33				
6	153,500.00	92,900.00	46.67	174.43	105.57	280.00				
4	80,400.00	100,119.00	34.19	60.91	75.85	136.76				
3	22,200.00	64,800.00	16.48	12.61	36.82	49.43				
2	-	15,600.00	2.95	-	5.91	5.91				
1	-	-	-	-	-	-				
	586,400.00	549,619.00	215.16	971.02	642.63	1,613.65				

TOTAL MAINS										
CURRENT INVENTORY WITH IMPROVEMENTS			PREVIOUS PSC REPORT AND IMPROVEMENTS							
	LENGTH, FT.	LENGTH, MI.	IDM	Miles	IDM	PERCENT INCREASE	Year 2002 MILES FEET		Series III, Feet PROPOSED	Total, Feet
18	32,679	6.19	111.41	1.10	19.80	462.7%	6.19	32,679.00		32,679.00
16	70,403	13.33	213.34	0.20	3.20	6567.0%	13.33	70,403.00		70,403.00
12	71,410	13.52	162.30	9.30	111.60	45.4%	13.52	71,410.00		71,410.00
10	86,524	16.39	163.87	10.00	100.00	63.9%	16.11	85,061.00	1,463.00	86,524.00
8	457,442	86.64	693.09	64.59	516.72	34.1%	67.91	358,559.00	98,883.00	457,442.00
6	546,348	103.48	620.85	74.67	448.02	38.6%	95.24	502,893.00	43,455.00	546,348.00
4	733,433	138.91	555.63	115.07	460.28	20.7%	129.86	685,649.00	47,784.00	733,433.00
3	528,550	100.10	300.31	109.45	328.35	-8.5%	100.10	528,550.00		528,550.00
2	443,018	83.90	167.81	72.60	145.20	15.6%	83.90	443,018.00		443,018.00
1	6,747	1.28	1.28	0.50	0.50	155.6%	1.28	6,747.00		6,747.00
	2,976,554.39	563.74	2,989.89	457.48	2,133.67	40.1%	527.46	2,784,969.00	191,585.00	2,976,554.00
RATIOS OF JOINTLY USED MAINS TO TOTAL MAINS										
					Ratio	Shared Mains	Total Mains	Ratio		
PRIMARY & SECONDARY					0.5397	1,613.65	2,989.89	0.5397		
PRIMARY MAINS ONLY					0.3248	971.02	2,989.89	0.3248		
PRIMARY MAINS ONLY LESS GRAYSON					0.3055	913.33	2,989.89	0.3055		
PRIMARY MAINS ONLY LESS GRAYSON & 3" & SMALLER					0.3013	900.72	2,989.89	0.3013		
PRIMARY MAINS ONLY LESS 3" & SMALLER					0.3205	958.41	2,989.89	0.3205		

Secondary mains have been removed from the inch mile ratio calculation as have primary mains 3" and smaller. Grayson County is not purchasing water at this time therefore, their miles have not been included. Proposed new lines are also not included as they have no direct benefit to the wholesale customers. Wholesale inch mile ratio used is .3013.

OHIO COUNTY WATER DISTRICT				
WHOLESALE ALLOCATION FACTORS				
			Allocation Factors	
Plant Use Percentage	21.13%		0.0500	
Line Loss Percentage	9.97%		0.0997	
Plant Use and Line Loss (1)	31.09%		0.1497	
Ohio County Production Multiplier	1 / 1 - 0.3190		1.4684	
Wholesale Inch Mile Ratio	900.72 / 2,989.86		0.3013	
Wholesale Share of Line Loss	.3830 x .0997		0.0300	
Joint Share of Plant Use and Line Loss	.0382 + .0500		0.0800	
Wholesale Production Multiplier	1 / 1 - .0882		1.0967	
Production Allocation Factor	124,329,036	x	1.0967	0.2254
	412,037,776		1.4684	
Transmission Factor	124,329,036	x	0.3013	0.0909
	412,037,776			
Commodity Factor	124,329,036			0.3017
	412,037,776			
Because the plant use percentage of 21.13 is considered above "normal" only 5 percent has been allocated to the wholesale customers.				

OHIO COUNTY WATER DISTRICT

ALLOCATION OF EXPENSES

Expense	Total	Pumping and Treatment	Transmission and Distribution	Customer
Salaries and Wages	\$ 629,649	\$ 209,093	\$ 302,735	\$ 117,821
Employee Pension and Benefits	137,274	46,889	67,889	22,496
Payroll Taxes	49,271	16,259	23,650	9,361
Purchased Power	138,022	101,031	36,991	
Chemicals	38,580	38,580		
Materials and Supplies	59,846	3,903	37,924	18,019
Contractual Services Other	149,142	87,899	60,739	504
Rents	7,027		513	6,514
Transportation Expense	40,698	4,105	32,164	4,429
Bad Debts	11,817			11,817
Interest Expense - Deposits	188			188
Miscellaneous	6,939	1,307	1,699	3,933
Subtotal Less Commodity Percentage	\$ 1,128,842	\$ 369,455	\$ 564,304	\$ 195,082
		0.3273	0.4999	0.1728
Administrative and General				
Salaries and Wages	116,853	38,244	58,414	20,194
Payroll Taxes	9,623	3,149	4,811	1,663
Pensions and Benefits	22,437	7,343	11,216	3,877
Insurance	9,553	3,127	4,776	1,651
Materials and Supplies	15,614	5,110	7,805	2,698
Contractual Services Eng., Acct., Legal	67,156	21,979	33,571	11,606
Rents	8,926	2,921	4,462	1,543
Transportation Expense	6,839	2,238	3,419	1,182
Insurance	12,107	3,962	6,052	2,092
Miscellaneous	20,256	6,630	10,126	3,501
Amortization	19,637	6,427	9,816	3,394
Subtotal	\$ 1,577,454	\$ 610,198	\$ 718,773	\$ 248,483
Depreciation	370,113	44,784	307,416	17,913
Debt Service plus Coverage at 1.2	1,147,362	143,306	954,261	49,796
Total Expenses	\$ 3,094,929	\$ 798,288	\$ 1,980,450	\$ 316,192

Debt Service allocated based on 2001 debt service shown in Annual Report. Utility requesting only 67 percent of depreciation be included for rate making purposes.

OHIO COUNTY WATER DISTRICT				
WHOLESALE RATE				
Expense	Total	Allocation Factor	Amount to Wholesale	Rate to Wholesale
Commodity				
Purchased Power*	\$ 138,022		\$ 21,724	\$ 0.17
Chemicals	38,580	0.3017	11,640	0.09
Operation and Maintenance				
Pumping and Treatment	470,587	0.2254	106,070	0.85
Transmission and Distribution	681,782	0.0909	61,975	0.50
Customer	248,483			
Depreciation				
Pumping and Treatment	44,784	0.2254	10,094	0.08
Transmission and Distribution	307,416	0.0909	27,945	0.22
Customer	17,913			
Debt Service				
Pumping and Treatment*	143,306	0.2254	13,585	0.11
Transmission and Distribution*	954,261	0.0909	72,173	0.58
Customer	49,796			
Total Expenses	\$ 3,094,929			
Less Interest Income	67,674	0.0909	6,152	0.05
Cost of Service Rate			\$ 319,055	\$ 2.57
Proposed Rate			\$ 317,039	\$2.55

* For purposes of allocating debt service to the wholesale customers, \$160,295 has been deducted from transmission and distribution which includes interest and debt service on the new project which does not directly benefit the wholesale customers. The allocation of purchased power has been reduced because part of the system serving wholesale customers is gravity fed. (\$138,022 - .3017) * .2254

OHIO COUNTY WATER DISTRICT				
ALLOCATION OF RETAIL COSTS				
		Commodity	Demand	Customer
Operation and Maintenance		\$ 143,238	\$ 986,340	\$ 248,483
Depreciation			314,161	17,913
Debt Service			1,011,809	49,796
General Water Cost to Retail	\$ 2,771,740	\$ 143,238	\$ 2,312,310	\$ 316,192
Less:				
Forfeited Discounts	(61,595)			(61,595)
Interest Income	(61,522)		(61,522)	
Misc. Service Revenues	(23,108)			(23,108)
Other Water Revenues	(2,044)			(2,044)
Leak Adjustment Revenue	(30,600)	(30,600)		
Revenue Required from Retail Rates	\$ 2,592,871	\$ 112,638	\$ 2,250,788	\$ 229,445
SUMMARY				
Revenue From Retail Rates	\$ 2,592,871			
Interest Income	67,674			
Other Revenue	117,347			
Wholesale Revenue	317,039			
Total Revenue Requested	\$ 3,094,931			

OHIO COUNTY WATER DISTRICT

CALCULATION OF PROPOSED RATES

	Total	First 2,000	Next 18,000	Next 30,000	Next 50,000	Over 100,000
Actual Water Sales						
Thousand Gallons	275,708.7	103,796.0	143,962.0	10,094.9	6,779.4	11,076.4
Percentage		0.3765	0.5222	0.0366	0.0246	0.0402
Weighted Sales for Demand						
Thousand Gallons	494,218.5	207,592.0	251,933.5	15,142.4	8,474.3	11,076.4
Percentage		0.4200	0.5098	0.0306	0.0171	0.0224
Allocation of Costs						
Commodity	\$ 112,638	\$ 42,405	\$ 58,814	\$ 4,124	\$ 2,770	\$ 4,525
Demand	2,250,788	945,423	1,147,365	68,962	38,594	50,445
Customer	229,445	229,445				
Total	\$ 2,592,871	\$ 1,217,273	\$ 1,206,179	\$ 73,086	\$ 41,363	\$ 54,970
Number of Bills	60,430					
Cost of Service Rates		\$ 20.14	\$ 8.38	\$ 7.24	\$ 6.10	\$ 4.96
Proposed Rates		20.11	8.39	7.26	6.12	4.97

OHIO COUNTY WATER DISTRICT				
VERIFICATION OF RATES				
	Bills	Gallons	Rate	Revenue
First 2,000	14,782	103,796	\$ 20.11	\$ 1,215,247
Next 18,000	44,851	143,962	8.39	1,207,841
Next 30,000	580	10,095	7.26	73,289
Next 50,000	135	6,779	6.12	41,490
Over 100,000	82	11,076	4.97	55,050
Total	60,430			\$ 2,592,917
Wholesale		124,329	\$ 2.55	317,039
Leaks		12,000	2.55	30,600
Other Revenue				154,421
Total Revenue				\$ 3,094,977

OHIO COUNTY WATER DISTRICT

COMPARISON OF WHOLESALE AND LEAK ADJUSTMENT RATE

Usage	Current Cost	Cost at Proposed	Increase	Percentage
1,000	\$ 17.23	\$ 20.11	\$ 2.88	17%
2,000	17.23	20.11	2.88	17%
3,000	24.78	28.50	3.72	15%
4,000	32.33	36.89	4.56	14%
5,000	39.88	45.28	5.40	14%
10,000	77.63	87.23	9.60	12%
20,000	153.13	171.13	18.00	12%
25,000	185.93	207.43	21.50	12%
50,000	349.93	388.93	39.00	11%
75,000	488.93	541.93	53.00	11%
100,000	627.93	694.93	67.00	11%

WHOLESALE AND LEAK ADJUSTMENT RATES

Per 1,000 Gallons	Current Rate	Revised Rate	Increase	Percentage
	\$ 1.53	\$ 2.55	\$ 1.02	67%
	Current Rates	Proposed Rates		
First 2,000	\$ 17.23	\$ 20.11		
Next 18,000	7.55	8.39		
Next 30,000	6.56	7.26		
Next 50,000	5.56	6.12		
Over 100,000	4.58	4.97		