



City of Annapolis



Water and Sewer Rate and Fee Study
Citizen's Advisory Committee Workshop #3
Rate Alternatives and Capital Fees

May 25th, 2011

Water and Sewer Rates

Residential Usage Detail

Actual 2008 Inside City & Outside City Quarterly Allocated Water consumption		
Usage Block (2,000 gallon blocks)	% Breakdown	Cumulative %
0 – 2,000 gallons	13.0%	13.0%
2,001 – 4,000 gallons	12.4%	25.3%
4,001 – 6,000 gallons	11.4%	36.8%
6,001 – 8,000 gallons	10.2%	47.0%
8,001 – 10,000 gallons	8.8%	55.8%
10,001 – 12,000 gallons	7.4%	63.2%
12,001 – 14,000 gallons	6.1%	69.3%
14,001 – 16,000 gallons	4.9%	74.2%
16,001 – 18,000 gallons	4.0%	78.2%
18,001 – 20,000 gallons	3.3%	81.5%
20,001 – 22,000 gallons	2.7%	84.1%
22,001 – 24,000 gallons	2.2%	86.3%
24,001 – 26,000 gallons	1.8%	88.2%
26,001 – 28,000 gallons	1.5%	89.7%
28,001 – 30,000 gallons	1.3%	91.0%
Over 30,000 gallons	9.0%	100.0%

Average Residential Water Consumption

14,909 gallons per quarter

4,970 gallons per month

165.67 gallons per day

Non-Residential & Multi-Family Usage Detail

Actual 2008 Inside City & Outside City Quarterly Allocated Water consumption		
Usage Block (7,000 gallon blocks)	% Breakdown	Cumulative %
0 – 7,000 gallons	25.2%	25.2%
7,001 – 14,000 gallons	15.9%	41.0%
14,001 – 21,000 gallons	8.9%	49.9%
21,001 – 28,000 gallons	6.2%	56.1%
28,001 – 35,000 gallons	4.3%	60.4%
35,001 – 42,000 gallons	3.4%	63.9%
42,001 – 49,000 gallons	2.8%	66.7%
49,001 – 56,000 gallons	2.6%	69.3%
56,001 – 63,000 gallons	2.0%	71.2%
63,001 – 70,000 gallons	1.7%	72.9%
70,001 – 77,000 gallons	1.5%	74.4%
77,001 – 84,000 gallons	1.6%	76.0%
84,001 – 91,000 gallons	1.6%	77.5%
91,001 – 98,000 gallons	1.3%	78.9%
Over 98,000 gallons	21.1%	100.0%

Average Non-Residential Water Consumption

74,837 gallons per quarter

24,946 gallons per month

831.53 gallons per day

Rate Structure Objectives / Guiding Principles

- Revenue Stability
 - Implement Financial Plan
 - Enhanced Fixed Charges
- Cost of Service Recovery
 - Implement Cost of Service Allocations
 - Implement Tiered Structures Based on Usage Patterns for Water Charges
 - Defensible Sewer Rate Structure - Uniform Unit Rate Structure
- Affordability
 - Minimize Customer Impacts

Fixed Portion of Structure

- Alternative 1 (Current Rate Design)
 - Minimum bill (same for all customers)
 - Includes 5,000 gallons
 - Recovers 11% of water and sewer current revenues
- Alternatives 2 - 4
 - Fixed charge based on meter size (no usage included)
 - Recovers 10% of water and sewer proposed revenues

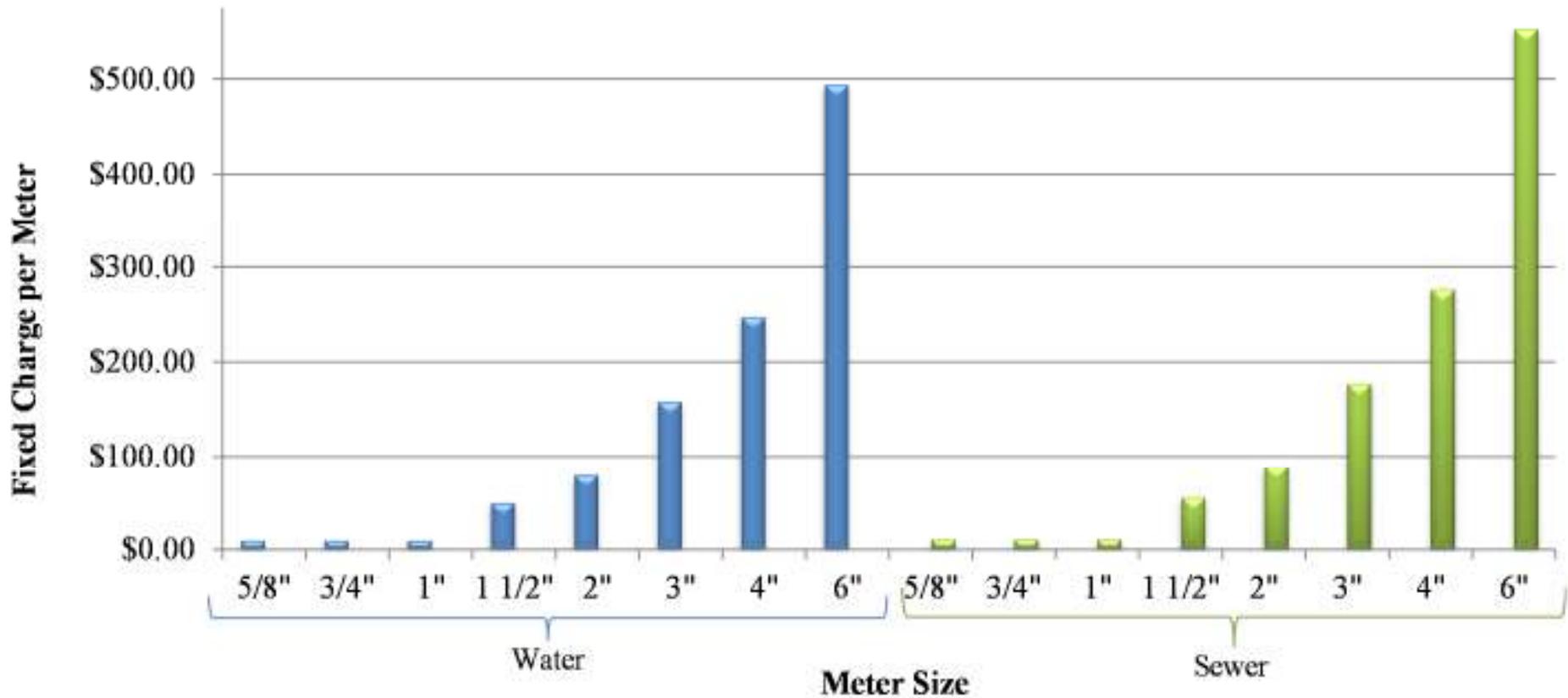
Quarterly Minimum Bill vs. Quarterly Fixed Charge per EDU

Water Rate Structure			
Meter Size	Meter Equivalent (EDU)	Current Minimum Bill FY 11	Proposed Fixed Charge FY 12
1" or less	1.0	\$15.60	\$9.89
1 1/2"	5.0	\$15.60	\$49.43
2"	8.0	\$15.60	\$79.09
3"	16.0	\$15.60	\$158.19
4"	25.0	\$15.60	\$247.17
6"	50.0	\$15.60	\$494.33

Sewer Rate Structure			
Meter Size	Meter Equivalent (EDU)	Current Minimum Bill FY 11	Proposed Fixed Charge FY 12
1" or less	1.0	\$18.19	\$11.05
1 1/2"	5.0	\$18.19	\$55.26
2"	8.0	\$18.19	\$88.42
3"	16.0	\$18.19	\$176.83
4"	25.0	\$18.19	\$276.30
6"	50.0	\$18.19	\$552.61

- 1 EDU represents 250 gallons of usage per day
- Rates are shown for Inside City customers

Proposed FY 12 Quarterly Fixed Charge by Meter Size



- Rates are shown for Inside City customers

Variable Portion of Structure

- **Alternative 1**
Current Rate Design with Updated Costs
- **Alternative 2**
Altered 3-Tier Residential Block Rate Water Structure
Uniform Non-Residential Water Unit Rate
Uniform Sewer Unit Rate
- **Alternative 3**
Altered 2-Tier Residential Block Rate Water Structure
Uniform Non-Residential Water Unit Rate
Uniform Sewer Unit Rate
- **Alternative 4**
Altered 3-Tier Residential and Non-Residential Block Rate Water Structure
Uniform Sewer Unit Rate

Alternative 1 - Current Rate Structure

	Water		Sewer	
	Current Rates FY 11	Proposed Rates FY 12	Current Rates FY 11	Proposed Rates FY 12
0 - 5,000 gallons (Quarterly Minimum Bill)	\$15.60	\$15.60	\$18.19	\$18.19
5,001 - 35,000 gallons Unit Rate per 1,000 gallons	\$2.42	\$5.32	\$2.82	\$5.33
Over - 35,001 gallons Unit Rate per 1,000 gallons	\$2.82	\$6.20	\$3.29	\$6.22
Naval Academy Usage Charges (per 1,000 gallons)			\$2.59	\$2.59

- Naval Academy usage charges should be \$4.21 per 1,000 gallon in 2012 but negotiations may take up to 12 months.

*** Rates are shown for Inside City customers**

Alternative 2

	Proposed Rates FY 12	
	Water	Sewer
Quarterly Fixed Charge per EDU (no usage included)	\$9.89	\$11.05
Residential Usage Charges		
0 - 7,000 gallons (per 1,000 gallons)	\$3.12	\$4.86
7,001 - 20,000 gallons (per 1,000 gallons)	\$6.25	
Over - 20,001 gallons (per 1,000 gallons)	\$9.37	
Non-Residential Usage Charges (per 1,000 gallons)	\$4.65	
Naval Academy Usage Charges (per 1,000 gallons)		\$2.59

- Cost of Service results for water charges have been applied to revenues needed from Residential vs. Non-Residential Customers
- Residential usage blocks have been set to 40%, 40% and 20% for blocks 1, 2, & 3 respectively
- Naval Academy usage charges should be \$4.21 per 1,000 gallon in 2012 but negotiations may take up to 12 months.

Alternative 3

	Proposed Rates FY 12	
	Water	Sewer
Quarterly Fixed Charge per EDU (no usage included)	\$9.89	\$11.05
Residential Usage Charges		
0 - 18,000 gallons (per 1,000 gallons)*	\$3.84	\$4.86
Over - 18,001 gallons (per 1,000 gallons)	\$11.51	
Non-Residential Usage Charges (per 1,000 gallons)	\$4.65	
Naval Academy Usage Charges (per 1,000 gallons)		\$2.59

- Cost of Service results for water charges have been applied to revenues needed from Residential vs. Non-Residential Customers
- Naval Academy usage charges should be \$4.21 per 1,000 gallon in 2012 but negotiations may take up to 12 months.

*Residential blocks designed to provide 125% of average usage in first block

Alternative 4

	Proposed Rates FY 12	
	Water	Sewer
Quarterly Fixed Charge per EDU (no usage included)	\$9.89	\$11.05
Residential Usage Charges		
0 - 7,000 gallons (per 1,000 gallons)	\$3.12	\$4.86
7,001 - 20,000 gallons (per 1,000 gallons)	\$6.25	
Over - 20,001 gallons (per 1,000 gallons)	\$9.37	
Non-Residential Usage Charges		
0 - 65,000 gallons (per 1,000 gallons)	\$2.57	
65,001 - 315,000 gallons (per 1,000 gallons)	\$5.14	
Over 315,000 gallons (per 1,000 gallons)	\$7.71	
Naval Academy Usage Charges (per 1,000 gallons)		\$2.59

- Cost of Service results for water charges have been applied to revenues needed from Residential vs. Non-Residential Customers
- Residential and Non-Residential usage blocks have been set to 40%, 40% and 20% for blocks 1, 2, & 3 respectively
- Naval Academy usage charges should be \$4.21 per 1,000 gallon in 2012 but negotiations may take up to 12 months.

Sample Quarterly Water Bills (Residential)

Usage (gallons)	% of Customers using usage block shown:	Current Bill FY 11	Proposed Rates FY 12							
			Alt. 1	\$ Increase	Alt. 2	\$ Increase	Alt. 3	\$ Increase	Alt. 4	\$ Increase
0 - 3,000	6.7%	\$15.60	\$15.60	\$ -	\$19.25	\$3.65	\$21.39	\$5.79	\$19.25	\$3.65
3,001 - 6,000	12.8%	\$18.02	\$20.92	\$2.90	\$28.62	\$10.60	\$32.90	\$14.88	\$28.62	\$10.60
6,001 - 9,000	15.9%	\$25.28	\$36.88	\$11.60	\$44.24	\$18.96	\$44.41	\$19.13	\$44.24	\$18.96
9,001 - 12,000	15.8%	\$32.54	\$52.84	\$20.30	\$62.97	\$30.43	\$55.92	\$23.38	\$62.97	\$30.43
12,001 - 15,000	13.1%	\$39.80	\$68.80	\$29.00	\$81.71	\$41.91	\$67.43	\$27.63	\$81.71	\$41.91
15,001 - 22,000	18.1%	\$56.74	\$106.04	\$49.30	\$131.67	\$74.93	\$124.97	\$68.23	\$131.67	\$74.93
(Over 22,001) 50,000	17.6%	\$130.50	\$268.19	\$137.69	\$393.99	\$263.49	\$447.19	\$316.69	\$393.99	\$263.49

- Assumed Usage Billed shown in Red

Sample Quarterly Sewer Bills (Residential)

Usage (gallons)	% of Customers using usage block shown:	Current Bill FY 11	Proposed Rates FY 12			
			Alt. 1	\$ Increase	Alt. 2,3,4	\$ Increase
0 – 3,000	6.7%	\$18.19	\$18.19	\$ -	\$25.62	\$7.43
3,001 - 6,000	12.8%	\$21.01	\$23.52	\$2.51	\$40.18	\$19.17
6,001 - 9,000	15.9%	\$29.47	\$39.51	\$10.04	\$54.75	\$25.28
9,001 - 12,000	15.8%	\$37.93	\$55.50	\$17.57	\$69.32	\$31.39
12,001 - 15,000	13.1%	\$46.39	\$71.49	\$25.10	\$83.89	\$37.50
15,001 - 22,000	18.1%	\$66.13	\$108.80	\$42.67	\$117.88	\$51.75
(Over 22,001) 50,000	17.6%	\$152.14	\$271.37	\$119.23	\$253.85	\$101.71

- Assumed Usage Billed shown in **Red**

Sample Quarterly Combined Water and Sewer Bills (Residential)

Usage (gallons)	% of Customers using usage block shown:	Current Bill FY 11	Proposed Rates FY 12							
			Alt. 1	\$ Increase	Alt. 2	\$ Increase	Alt. 3	\$ Increase	Alt. 4	\$ Increase
0 – 3,000	6.7%	\$33.79	\$33.79	\$ -	\$44.87	\$11.08	\$47.01	\$13.22	\$44.87	\$11.08
3,001 - 6,000	12.8%	\$39.03	\$44.44	\$5.41	\$68.81	\$29.78	\$73.09	\$34.06	\$68.81	\$29.78
6,001 - 9,000	15.9%	\$54.75	\$76.39	\$21.64	\$98.99	\$44.24	\$99.16	\$44.41	\$98.99	\$44.24
9,001 - 12,000	15.8%	\$70.47	\$108.34	\$37.87	\$132.29	\$61.82	\$125.24	\$54.77	\$132.29	\$61.82
12,001 - 15,000	13.1%	\$86.19	\$140.29	\$54.10	\$165.60	\$79.41	\$151.32	\$65.13	\$165.60	\$79.41
15,001 - 22,000	18.1%	\$122.87	\$214.84	\$91.97	\$249.55	\$126.68	\$242.85	\$119.98	\$249.55	\$126.68
(Over 22,001) 50,000	17.6%	\$282.64	\$539.56	\$256.92	\$647.83	\$365.19	\$701.04	\$418.40	\$647.83	\$365.19

- Assumed Usage Billed shown in Red

Sample Quarterly Water Bills (Non-Residential)

Usage (gallons)	% of Customers using usage block shown:	Current Bill FY 11	Proposed Rates FY 12							
			Alt. 1	\$ Increase	Alt. 2	\$ Increase	Alt. 3	\$ Increase	Alt. 4	\$ Increase
0 – 3,000	11.7%	\$15.60	\$15.60	\$0.00	\$23.83	\$8.23	\$23.83	\$8.23	\$17.59	\$1.99
3,001 – 8,000	16.1%	\$22.86	\$31.56	\$8.70	\$47.06	\$24.20	\$47.06	\$24.20	\$30.44	\$7.58
8,001 – 15,000	14.6%	\$39.80	\$68.80	\$29.00	\$79.59	\$39.79	\$79.59	\$39.79	\$48.42	\$8.62
15,001 – 36,000	18.5%	\$91.02	\$181.40	\$90.38	\$177.16	\$86.14	\$177.16	\$86.14	\$102.36	\$11.34
36,001 – 63,000	10.3%	\$167.16	\$348.78	\$181.62	\$342.17	\$175.01	\$342.17	\$175.01	\$211.25	\$44.09
63,001 – 100,000	8.0%	\$271.50	\$578.16	\$306.66	\$543.75	\$272.25	\$543.75	\$272.25	\$425.85	\$154.35
(Over 100,001) 1,000,000	20.7%	\$2,809.50	\$6,157.56	\$3,348.06	\$4,804.75	\$1,995.25	\$4,804.75	\$1,995.25	\$6,887.87	\$4,078.37

• Assumed Usage Billed shown in Red

Sample Quarterly Sewer Bills (Non-Residential)

Usage (gallons)	% of Customers using usage block shown:	Current Bill FY 11	Proposed Rates FY 12			
			Alt. 1	\$ Increase	Alt. 2,3,4	\$ Increase
0 – 3,000	11.7%	\$18.19	\$18.19	\$0.00	\$25.62	\$7.43
3,001 – 8,000	16.1%	\$26.65	\$34.18	\$7.53	\$49.90	\$23.25
8,001 – 15,000	14.6%	\$46.39	\$71.49	\$25.10	\$83.89	\$37.50
15,001 – 36,000	18.5%	\$106.08	\$184.31	\$78.23	\$185.86	\$79.78
36,001 – 63,000	10.3%	\$194.91	\$352.20	\$157.29	\$361.17	\$166.26
63,001 – 100,000	8.0%	\$316.64	\$582.28	\$265.64	\$573.98	\$257.34
(Over 100,001) 1,000,000	20.7%	\$3,277.64	\$6,178.78	\$2,901.14	\$5,032.78	\$1,755.14

- Assumed Usage Billed shown in Red

Sample Quarterly Combined Water and Sewer Bills (Non-Residential)

Usage (gallons)	% of Customers using usage block shown:	Current Bill FY 11	Proposed Rates FY 12							
			Alt. 1	\$ Increase	Alt. 2	\$ Increase	Alt. 3	\$ Increase	Alt. 4	\$ Increase
0 – 3,000	11.7%	\$33.79	\$33.79	\$0.00	\$49.44	\$15.65	\$49.44	\$15.65	\$43.21	\$9.42
3,001 – 8,000	16.1%	\$49.51	\$65.74	\$16.23	\$96.96	\$47.45	\$96.96	\$47.45	\$80.33	\$30.82
8,001 – 15,000	14.6%	\$86.19	\$140.29	\$54.10	\$163.47	\$77.28	\$163.47	\$77.28	\$132.30	\$46.11
15,001 – 36,000	18.5%	\$197.10	\$365.71	\$168.61	\$363.03	\$165.93	\$363.03	\$165.93	\$288.22	\$91.12
36,001 – 63,000	10.3%	\$362.07	\$700.98	\$338.91	\$703.33	\$341.26	\$703.33	\$341.26	\$572.42	\$210.35
63,001 – 100,000	8.0%	\$588.14	\$1,160.44	\$572.30	\$1,117.73	\$529.59	\$1,117.73	\$529.59	\$999.84	\$411.70
(Over 100,001) 1,000,000	20.7%	\$6,087.14	\$12,336.34	\$6,249.20	\$9,837.53	\$3,750.39	\$9,837.53	\$3,750.39	\$11,920.65	\$5,833.51

• Assumed Usage Billed shown in Red



Capital Fees

Current Capital Facility Impact Charges

Type	Capital Facility Impact Charge Current Fees	
	Equivalents	Water & Sewer
Residential (per dwelling unit)	1.00	\$1,120
Hotel (per Room)	0.64	\$720
Restaurant (per seat)	0.18	\$200
Commercial/warehouse (per 1,000 sq ft)	0.13	\$150
Tavern (per seat)	0.09	\$100
Commercial/office	0.67	\$750
Commercial rental (per toilet room)	2.14	\$2,400

Current Capital Facility Charges

	Capital Facility Charge Current Fees	
Type	Water	Sewer
Per Residential Unit*	\$900	\$1,800

* 1 Residential Unit = 250 gallons per day

Current Connection Charges

	Connection Charges Current Fees			
Type	Equivalents	Water	EDU's	Sewer
3/4"	1.00	\$2,200	1.00	\$2,800
1"	1.23	\$2,700		
1 1/2"	1.45	\$3,200		
2"	1.86	\$4,100		
3"	2.45	\$5,400		
4"	3.09	\$6,800		
6"	5.09	\$11,200		
8"	TBD		1.29	\$3,600
10"			1.46	\$4,100
12"			1.86	\$5,200

Calculating Capital Facility/Capacity Fees

Buy-In Method Capital Cost per EDU

$$\frac{\text{Replacement Costs less Net Depreciation (RCLND)}}{\text{Existing Capacity}} * \text{gpd/EDU}$$

Average Cost of Capacity Capital Cost per EDU

$$\frac{\text{RCLND} + \text{Cost of Planned Improvements}}{\text{Capacity Available}} * \text{gpd/EDU}$$

Calculated Capital Facility/Capacity Fee

Calculated Water Capacity Fee: Average Cost Method

$$\frac{\$115,467,226}{5.9 \text{ mgd}} * 250 \text{ gpd/EDU} = \$4,900/\text{EDU (rounded)}$$

Calculated Sewer Capacity Fee: Buy-In Method

$$\frac{\$48,809,081}{6.7 \text{ mgd}} * 250 \text{ gpd/EDU} = \$1,900/\text{EDU (rounded)}$$

Calculated Capital Facility/Capacity Fees

Type	Capital Facility/Capacity Fees		
	Equivalents	Water	Sewer
Residential (per dwelling unit)	1.00	\$4,900	\$1,900
Hotel (per Room)	0.64	\$3,136	\$1,216
Restaurant (per seat)	0.18	\$882	\$342
Commercial/warehouse (per 1,000 sq ft)	0.13	\$637	\$247
Tavern (per seat)	0.09	\$441	\$171
Commercial/office	0.67	\$3,283	\$1,273
Commercial rental (per toilet room)	2.14	\$10,486	\$4,066

Water and Sewer Capital Fee Comparison

Charge	(Residential 1" Meter Customer)	
	Current	Proposed
Water & Sewer Capital Facility Impact Charge	\$1,120	-
Water Capital Facility Charge	\$900	-
Sewer Capital Facility Charge	\$1,800	-
Water Capital Facility/Capacity Fee	-	\$4,900
Sewer Capital Facility/Capacity Fee	-	\$1,900
Total Capital Facility Capacity Fee	\$3,820	\$6,800
Water Connection Charge	\$2,700	\$3,600
Sewer Connection Charge	\$2,800	\$5,000
TOTAL FEES	\$9,320	\$15,400