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## Fire Hydrant Charge Study

For the Water Utility Enterprise Fund

GAI # A050080.01

December 2008



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# REPORT

December 4, 2008  
GAI Proj. # A050080.01

Larry W. Napier, CGFO  
Director of Finance and Accounting  
Interim Utility Director  
City of Fellsmere  
21 South Cypress Street  
Fellsmere, FL 32948-6714

**Subject: Fire Hydrant Charges Study**

Dear Mr. Napier:

The City of Fellsmere (the “City”) retained GAI Consultants, Inc. (GAI) to prepare an analysis relative to the City’s fire hydrant charges. The primary objective of this Study was to identify if the City’s fire hydrant charges were appropriately recovering the costs associated with providing service. Discussions included herein address the identification of capital investment and annual maintenance costs associated with the City’s fire hydrants.

**GENERAL**

Fire protection service differs from other services provided by the Utility System. Essentially it is a standby service that the Utility makes available on demand. Although most fire hydrants and sprinkler connections are rarely used, the Utility must be ready to provide adequate water quantities and pressures at all times throughout the distribution system. The costs associated with maintaining the supply, treatment, pumping, storage, and distribution capacity for fire protection services include annual O&M costs and capital costs invested in facilities that are sized larger than necessary for non fire-fighting purposes.

There are several methods of recovering the costs associated with providing the fire protection service. One such method is to recover the costs of public and private fire protection on a per fire hydrant basis. The per hydrant



charge can then be assessed to the county served by the Utility, and the county can pass the cost on to the individual taxpayers, possibly as part of the ad valorem or other property tax. In this way, individual property owners are assessed a portion of the fire protection costs based on the value of their property. This method assumes the benefit of the fire protection services are related to property value.

## **CUSTOMERS, RATES, AND CHARGES**

Currently, there are 112 public and 21 privately owned fire hydrants throughout the City's service area that are maintained by the City's Utility Department. The City's Code of Ordinances, Section 78-83(h), provides for an Annual Fire Protection Charge. This charge has been established to defray the cost of providing extra capacity in the water system and maintaining water and fire protection facilities for customers having sprinkler systems, private fire lines, etc., and it shall be designed to recover such costs, including cost for the additional capacity and expense associated with line size and fire hydrants. Per Resolution No. 07-Y, the fire hydrant charge for FY 2008 is \$170.00 per fire hydrant per year.

## **FIRE HYDRANT CHARGE DEVELOPMENT**

The City's fire hydrant charge should recover both the additional capital costs incurred to provide the fire protection service and the costs incurred to maintain the system on an annual basis. Once these costs are appropriately identified, they will be allocated on a per fire hydrant basis.

### Annual Maintenance Costs

The City's Utility Department is responsible for providing annual maintenance of the fire hydrants. This annual maintenance includes such things as filling the oil reservoir, operating the hydrant, exercising the lead, flushing the hydrant, performing a flow test (including water usage), weeding, painting, and other repairs as required.

In order to determine the annual maintenance costs allocable each fire hydrant, indirect and direct costs were examined. The average hourly labor rates (including benefits and overhead allocations) as well as utility vehicle costs were determined, as shown in **Table 1** and detailed on **Schedule 1**.

**Table 1**  
**Standard Unit Rates**

<u>Description</u>	<u>Cost</u>
Labor:	
Field Worker	\$ 35.50 per hour
Administrative Worker	\$ 34.50 per hour
Capital Equipment:	
Utility Truck	\$ 5.40 per trip
Vehicle Fuel (ea.)	\$ 2.00 per trip

General annual maintenance was assumed to take approximately 1 hour per hydrant per year. Therefore, utilizing the standard unit rates, the general annual maintenance cost per fire hydrant per year is approximately \$53.00, as detailed on **Schedule 2**. A similar analysis was performed for flushing the hydrant. Typically, the hydrant should be flushed on an annual basis. This is usually accomplished with a 2-person crew in approximately 1.5 hours. Utilizing the standard unit rates in **Table 1**, the annual flushing costs per fire hydrant per year are approximately \$121.50 as detailed on **Schedule 3**. Therefore, the total annual maintenance cost per fire hydrant per year is approximately \$174.50.

#### Capital Related Costs

The potential maximum-day and maximum-hour demands that result from providing fire protection service can be significant. In general, these demands are determined based on maximum fire demands and individual system performance. In order to accommodate the fire flow demands, utilities are often required to oversize both the

treatment plant and water storage tanks. Based on GAI's experience with this Utility as well as other utilities throughout the State of Florida, water treatment facilities are normally oversized by 5.0% to 10.0% and water storage tanks between 10.0% and 15.0%. Based on our review of the Utility's asset listing, approximately \$1,203,676 has been invested in the water plant and storage tank. As detailed on **Schedule 4**, approximately \$108,381 of this amount is attributable to the fire flow demand. Assuming this amount would be financed over a 30-year period at approximately 4.75%, results in an annual capital expense allocation of \$6,850.72 or \$51.50 per fire hydrant per year.

### Summary

The combination of the total annual maintenance costs with the capital expenditures related to the additional capacity necessary to provide fire protection services, results in the total fire hydrant charge per meter of \$225.00 as shown on **Table 2** below.

**Table 2**  
**Fire Hydrant Charge Summary**  
**By Component**

Component	Amount
General Annual Maintenance	\$ 53.00
Flushing	121.50
Capital Related	51.50
Subtotal	\$ 226.00
Rounding Adjustment	(1.00)
Recommended Annual Fire Hydrant Charge	\$ 225.00

### **REASONABLENESS CHECK**

In evaluating the appropriateness of the proposed rate, GAI reviewed the Florida Administrative Code (F.A.C.) relative to FPSC regulated utilities. According to Section

25-30.465, F.A.C., "The rate for private fire protection service shall be a charge based on the size of the connection rather than the number of fixtures connected. The rate shall be one-twelfth the current base facility charge of the utility's meter sizes, unless otherwise supported by the utility." Based on this Code, assuming a 4" line connecting to the hydrant would be approximately \$23.77 per month or \$285.30 annually per Resolution No. 07-Y for FY 2008. Therefore, the proposed rate of \$225.00 per hydrant per year is reasonable.

## **CONCLUSION**

Based on the above analysis, we recommend a fire hydrant charge of \$225.00 per hydrant per year to recover both the additional capital investment related to the fire flow capacity and the Operating and Maintenance expenses related to servicing and maintaining the fire hydrants on an annual basis.

We appreciate the opportunity to be of service in this matter and look forward to assisting the City with the completion of the Sewer Expansion Program.

Very truly yours,

**GAI Consultants, Inc.**



Tara L. Hollis, C.P.A., M.B.A.  
Environmental Group Manager

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Fire Hydrant Study

Attachments

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# SCHEDULES

**Schedule 1  
City of Fellsmere  
Fire Hydrant Charge Study  
General Cost Assumptions**

<u>Description</u>	<u>Hourly Rate</u>	<u>Overtime Factor</u>	<u>Adjusted Rate</u>
<b>Labor Expense</b>			
<b><u>Hourly Field Worker Wages:</u></b>			
Average Hourly Wage per Worker	\$ 14.00	1.50	\$ 21.00
Estimated Benefit Allocation	45.00%		20.00%
Average Hourly Benefits per Worker	\$ 6.30		\$ 4.20
Subtotal Average Hourly Cost per Worker	\$ 20.30	1.50	\$ 30.45
Overhead Factor	75.00%		75.00%
Calculated Total Average Hourly Cost per Worker	\$ 35.53		\$ 53.29
Adjustment	(0.03)		0.21
Adjusted Total Average Hourly Cost per Worker	<u>\$ 35.50</u>		<u>\$ 53.50</u>
<b><u>Hourly Administrative Worker Wages:</u></b>			
Average Hourly Wage per Worker	\$ 13.50	1.50	\$ 20.25
Estimated Benefit Allocation	45.00%		20.00%
Average Hourly Benefits per Worker	\$ 6.08		\$ 4.05
Subtotal Average Hourly Cost per Worker	\$ 19.58	1.50	\$ 29.36
Overhead Factor	75.00%		75.00%
Calculated Total Average Hourly Cost per Worker	\$ 34.26		\$ 51.38
Adjustment	0.24		0.12
Adjusted Total Average Hourly Cost per Worker	<u>\$ 34.50</u>		<u>\$ 51.50</u>
<b>Equipment Expense</b>			
<b><u>Utility Trucks:</u></b>			
Assumed Average Hourly Rate per Utility Truck (Cost per Mile)			\$ 0.54
Mile Per Average Trip			<u>\$ 10.00</u>
Average Hourly Rate Per Utility Truck Per Trip			\$ 5.40
<b><u>Average Round-Trip Miles per Service Trip:</u></b>			
Assumed Roundtrip Miles per Service Trip			10.00
Average Miles/Gallon/Vehicle			10.00
Gallons per Trip			1.00
Cost per Gallon			\$ 2.00
Estimated Gasoline Expense per Service Trip			\$ 2.00

**Schedule 2  
City of Fellsmere  
Fire Hydrant Charge Study  
General Annual Maintenance**

<u>Description</u>	<u>Unit Assumptions</u>			<u>Total</u>
	<u>Units</u>	<u>Hours per Unit</u>	<u>Rate per Unit</u>	
<u>Labor Expense:</u>				
Administration	0.00	0.00	\$ 34.50	\$ -
Work Crew	1.00	1.00	\$ 35.50	35.50
Total				<u>\$ 35.50</u>
<u>Equipment Expense:</u>				
Utility Trucks	1.00		\$ 5.40	\$ 5.40
Gasoline	1.00		\$ 2.00	2.00
Total				<u>\$ 7.40</u>
<u>Materials Expense:</u>				
Total				\$ 10.00
<u>Total Service Cost:</u>				
Labor, Equipment & Materials				\$ 52.90
Rounding Adjustment				0.10
<b>Total General Annual Maintenance per Hydrant</b>				<b><u><u>\$ 53.00</u></u></b>

**Schedule 3  
City of Fellsmere  
Fire Hydrant Charge Study  
Flushing**

<u>Description</u>	<u>Unit Assumptions</u>			<u>Total</u>
	<u>Units</u>	<u>Hours per Unit</u>	<u>Rate per Unit</u>	
<u>Labor Expense:</u>				
Administration	0.00	0.00	\$ 34.50	\$ -
Work Crew	2.00	1.50	\$ 35.50	106.50
Total				<u>\$ 106.50</u>
<u>Equipment Expense:</u>				
Utility Trucks	1.00		\$ 5.40	\$ 5.40
Gasoline	1.00		\$ 2.00	2.00
Total				<u>\$ 7.40</u>
<u>Materials Expense:</u>				
Total				\$ 7.50
<u>Total Service Cost:</u>				
Labor, Equipment & Materials				\$ 121.40
Rounding Adjustment				0.10
<b>Total Annual Flushing Costs per Hydrant</b>				<b><u><u>\$ 121.50</u></u></b>

**Schedule 4  
City of Fellsmere  
Fire Hydrant Charge Study  
Capital Related Expenses**

<u>Description</u>	<u>Capital Cost</u>	<u>Allocated to Fire Hydrant Services</u>	
		<u>Percent (1)</u>	<u>Amount</u>
Water Plant	\$ 589,540.94	7.50%	\$ 44,215.57
Water Plant Additions	252,023.89	7.50%	18,901.79
Water Tank	362,110.98	12.50%	45,263.87
<b>Total</b>	<b>\$ 1,203,675.81</b>		<b>\$ 108,381.23</b>
 <u>Assumptions:</u>			
Term (Years)			30.00
Interest Rate			4.75%
Annual Capital Related Expense Allocation			\$6,850.72
Public and Private Fire Hydrants			133.00
Total Cost			\$ 51.51
Rounding Adjustment			(0.01)
<b>Total Capital Related Expense per Fire Hydrant</b>			<b>\$ 51.50</b>

Note: (1) Approximate additional capacity required to provide fire protection services.