TECHNICAL MEMORANDUM

PREPARED FOR: WaterPro

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SUBJECT: Private Fire Service User Fees

INTRODUCTION

WaterPro Inc. has a significant number of private fire service connections to its system. It does not currently charge a user fee for these connections. Bowen, Collins & Associates (BC&A) was retained by WaterPro to evaluate what user fee structure would be reasonable for providing this service. The purpose of this technical memorandum {TM) is to document the results of is evaluation.

BASIS OF FIRE PROTECTION USER FEES

Fire protection is a service that differs from many of the other services provided by WaterPro. Essentially, it is a standby service that is rarely used, but one that WaterPro must be ready to provide at all times. As part of providing these services, WaterPro incurs additional costs associated with maintaining the supply, treatment, pumping, storage, and distribution capacity that must be sized larger than would be .-required for non-firef ighting purposes. The approach of this memorandum is to identify the actual costs of providing service to WaterPro's private fire service connections. This has been done using cost-of-service principles as outlined in the American Water Works Association (AWWA) Manual M1 - Principles of Water Rates, Fees, and Charges.

It should be noted that a utility will incur two types of costs associated with fire protection. The first is the capital cost associated with the initial installation of the fire service connections and the infrastructure associated with providing service to these connections. The second is the operation and maintenance cost associated with providing ongoing service to these facilities. This memorandum only addresses the second type of

cost. This type of cost can be collected through monthly or annual user fees. The first type of cost can only be collected through impact fees. While consideration of impact fees in association with fire protection is beyond the scope of this memorandum, these represent real costs to WaterPro that should be considered next time impact fees are being developed and adopted.

PRIVATE FIRE SERVICE CONNECTIONS

The number of private service connections in the WaterPro distribution system is summarized in Table 1.

Table 1
WaterPro Private Service Connections

Size (in)	Quantity	AWWA Demand Factor	Fire Service Equivalent
2	9	6.19	55.7
4	25	38.3	958
6	49	111	5,454
8	8	237	1,898
10	1	427	427
Total	92	--	8,792

Included in the table is the AWWA demand factor for each size of connection. This factor has been developed based on the potential demands for firefighting purposes of each size of service. It is used to calculate the relative magnitude of impact each size of fire service will have on the system.

USER FEE CALCULATION

A calculation of appropriate user fees for private fire service connections has been prepared based on AWWA cost-of-service principles. The source of most of the data used in this analysis is the Culinary Water Master Plan Update prepared by Epic Engineering (currently in draft form).

Administrative Costs

AWWA Manual Ml identifies two types of costs that can be recovered in association with private fire services: connection administrative costs and system fire protection costs. Administrative costs are usually collected from regular water service connections through the collection of a monthly base service charge. This charge consists of two components: a per-meter charge to recover costs associated with customer meters and service lines and a per-bill charge to cover the costs of billing, collection, and other overhead. Though private fire services do not require meter readings, they do require periodic checking and other routine maintenance activities.

As a result, annual administrative costs for private fire service connections can be calculated as follows (based on 2009 values):

$1,779,707	Total annual administrative costs (Master Plan Update, Table 9.2)
x 10 percent	Percent of administrative costs applicable to fire services
= $177,971	Portion of administrative costs applicable to fire services
$177,971	
÷ 7,718	Combined number of metered connections (7,626, as reported by WaterPro personnel) and fire service connections (92)
$23.06/yr	**Annual administrative cost applicable to fire service connections**

The calculated charge represents the total administrative cost associated with private fire service connections and will be the same for all fire service connections, regardless of connection size. It should be noted that the Master Plan Update did not include a detailed breakdown of administrative costs. Thus, the estimated percentage of total costs applicable to private fire services shown above is based on BC&A's experience with other similar entities.

Fire Protection Capacity Costs

The second type of cost to be recovered in association with private fire service is the cost of providing the additional system capacity associated with the fire protection. To do this, AWWA Manual Ml recommends calculating the total cost of fire protection for the system as a whole, and then dividing this between public fire protection (fire hydrants) and private fire services. System fire protection costs include portions of both average day and maximum day system costs.

Average Day Costs–The rate study contained in the Master Plan Update does not include a detailed division between average day and peak day costs for the system. However, if it is assumed that the recommended Tier 1 overage rates include average day costs only (per AWWA cost-of-service recommendations), average day costs for the system can be calculated as follows:

8,956	Number of metered connections (Master Plan Update, Table 4.2)
x 623 gal/conn	Average daily water use per connection (MPU, Table 5.2)
= 5,580,000 gpd	Average daily water use
5,580,000 gpd	
x 365 davs	
= 2.04 billion gals	Average annual water use
2.04 billion gals	
x $1.23/kgal	Tier 1 water rate
$2,505,000	**Annual average day system costs**

The average day costs applicable to fire protection can be calculated by multiplying total average day costs by the ratio of water used for fire protection purposes to total system water use. The quantity of water used for fire protection is obviously very small relative to other system uses and is not metered. Therefore, a nominal amount of 1 percent has been used here based on recommendations from AWWA Manual M1. Based on this assumption, average day system costs associated with fire protection are as follows:

$2,505,000	Annual average day system costs
x 1 percent	Estimated water usage associated with fire protection
$25,050	**Annual average day fire protection costs**

Maximum Day Costs– Based on the same assumptions described above, maximum day costs for the system can be calculated as follows:

$3,424,000	Total volumetric system costs (Master Plan Update, Table 9.2)
- $2,505,000	Annual average day system costs
$919,000	**Annual maximum day system costs**

Similar to average day costs, the maximum day costs associated with fire protection can be calculated by multiplying total maximtm1 day costs by the ratio of capacity required for fire protection proposes to total system capacity use. Unlike average day use, the capacity required for fire protection can often be a significant portion of total system capacity.

Maximum day capacity required for fire protection has been based on required fire flow protection requirements as identified in the Master Plan Update:

4,500 gpm	Required fire flow (Master Plan Update, p. 5-1 0)
x 120 minutes	Required duration (Master Plan Update, p. 5-10)
540,000 gpd	Fire protection maximum day capacity
540,000 gpd	Fire protection maximum day capacity
-55,800 gpd	Fire protection average day capacity
484,200 gpd	**Extra fire protection capacity required for maximum day**

Maximum day capacity required for the system as a whole has been based on the system peaking factor and average day use as identified in the Master Plan Update:

5,580,000 gpd	System average daily water use (see above)
x 2.19	System peaking factor (Master Plan Update, p. 5-8)
12,220,000 gpd	System maximum day capacity
12,220,000 gpd	System maximum day capacity
- 5,580,000 gpd	System average day use
6,640,000 gpd	**Extra system capacity required for maximum day**

Finally, maximum day system costs associated with fire protection can be calculated as follows:

484,200 gpd	Extra fire protection capacity required for maximum day
÷ 6,640,000 gpd	Extra system capacity required for maximum day
7.29 percent	Percent of system capacity require for fire protection
$919,000	Annual maximum clay system costs
x 7.29 percent	Percent of system capacity require for fire protection
$67,013	**Annual maximum day fire protection costs**

Total Fire Protection Capacity Costs-Based on the calculations above, the total capacity costs associated with fire protection are as follows:

$25,050	Annual average day fire protection costs
+ $67,013	Annual maximum day fire protection costs
$92,063	**Total fire protection capacity costs**

Private Service Capacity Costs–As noted previously, the costs identified above are for both public and private fire protection. To examine private costs only, the total cost can be divided by the total number of fire service equivalents to develop a unit cost per fire service equivalent:

$92,063	Annual average day fire protection costs
÷ (8,792	Private fire service equivalents (see Table 1)
+ 176,712)	Public fire service equivalents (1,592 hydrants x 6" demand factor)
$0.50	**Fire protection capacity costs per fire service equivalent**

The cost of fire service capacity (public or private) is then simply the unit cost per fire service equivalent multiplied by the AWWA demand factor as summarized in Table 2.

Table 2
Fire Protection Capacity Cost

Size (in)	AWWA Demand Factor	Annual Fire Protection Capacity Cost
2	6.19	$ 3.07
4	38.3	$ 19.01
6	111	$ 55.09
8	237	$117.62
10	427	$211.91

Total Fire Service User Fee

The recommended private fire service user fee is the sum of the administrative cost of service and the fire protection capacity cost of service as summarized in Table 3.

Table 3
Recommended Fire Service User Fee

Size (in)	Annual Administrative Cost	Annual Fire Protection Capacity Cost	Total Annual Fire Service User Fee
2	$23.06	$26.13	$22.74
4	$23.06	$42.07	$38.68
6	$23.06	$78.15	$74.76
8	$23.06	$140.68	$137.29
10	$23.06	$234.97	$231.58

The total annual revenue that would be generated in association with the recommended fees is approximately $6,480 as summarize in Table 4.

Table 4
Project Annual Revenue from Fire Service User Fees

Size (in)	Quantity	Fire Service User Fee	Total Annual Revenue
2	9	$22.74	$235.18
4	25	$38.68	$1,051.67
6	49	$74.76	$3,829.20
8	8	$137.29	$1,125.43
10	1	$231.58	$234.97
Total	92	--	$6,476.46

COMPARISON WITH USER FEES CHARGED BY OTHER ENTITIES

BC&A surveyed a number of water utilities both within the State of Utah and nationally regarding user fees for private fire service connections. Within Utah, no other entities could be identified that currently charge a user fee for private fire services. A number of the surveyed entities do include an impact fee for fire services at the time of construction, but none have any kind of ongoing user fee.

Outside of the State, a significant number of entities were identified that charge private fire service user fees. A survey of five utilities located in the intermountain west revealed that annual fees ranged from $51.47 to $120 for a 4-inch fire service connection, with an average annual fee of $90.24. Thus, the proposed fees identified in Table 3 appear to be very reasonable compared to the fees being charged by other entities.

CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis above, BC&A would recommend the following actions:

1. **Consider adopting the recommended private fire service user fees**. Recommended fire service fees are summarized in Table 3. These represent the cost of providing service to private fire service connection. To most equitably distribute the costs of service among users, WaterPro should consider adopting the recommended user fees.

2. **Incorporate this user fee into future rate studies**. To properly account for the revenue generated by this fee, it is recommended that all future rate studies include the fee as part of their overall calculation. This will also give WaterPro an opportunity to adjust and refine this fee as part of the larger rate making process.

3. **Consider exploring private fire service impact fees**. This TM only addresses recovery of the operation and maintenance costs associated with fire service. To recover the capital costs associated with the initial installation of the fire service connections and the infrastructure associated with providing service to these connections, a separate impact fee study will be required. This should be considered next time impact fees are being developed and adopted.

4. **Apply future rate increases to recommended fees.** The recommended fees are based on 2009 system costs. In the Master Plan Update, rate increases have been identified for 2010 and 2012 to cover the projected future increases in cost of service. The fees developed here have been developed directly from data contained in the rate study for the Master Plan Update. Therefore, any future rate increases identified in the rate study that are adopted by WaterPro should also be applied to the fees recommended here.