



City Water System Improvement

Water Line Leak Detection

BACKGROUND INFORMATION:

The City of Sequim hired Hughes Utility Service Group September of this year to perform a leak detection program on waterlines throughout the city, with heavy focus on older lines. Upon completion Hughes found a total of eight (8) leaks accounting for an estimated water loss of 16,200 gallons per day (gpd). Hydrant and line flushing has not been accounted for in this leak detection program.

Lost and unaccounted for water. Lost and unaccounted for water is defined as the difference between metered source production and metered consumption, or that water that is lost between the well and the meter located at your home or business. "Lost" water includes any water loss due to leaks or unauthorized uses such as illegal service connections. "Unaccounted for water" also results from inaccurate meters, and water leaving the system for unmetered usage such as flushing of mains, fire flows, and unmetered services.

The City's conservation program has focused on reducing unaccounted for water. The City has performed leak detections in the past and found high water loss due to poor and leaking fire hydrants, high-pressure zones, unmetered services and old water lines. With proper funding, we have been able to install new lines, install pressure-reducing valves, repair and/or replace a large number of other faulty system components, and upgrade to new auto-read meters throughout.

In 1998, lost and unaccounted for water averaged approximately 235,000 gallons per day (gpd) or about 30% of what the city was producing. The city estimated that by doing needed repairs and upgrading of the system, a 15 percent or 145,000 gpd lost and unaccounted for water could be reclaimed by year 2018. We needed to do more.

DISCUSSION/ANALYSIS:

In 1998, some of the lost and unaccounted water was due to irrigating unmetered City parks, including Silberhorn Ball fields, Carrie Blake Park and buildings, the High School football field bathrooms, fire hydrant flushing, fire department training, and water trucks used for dust control and street cleaning etc.

The city started an aggressive maintenance, reconstruction and meter replacement program over a short period of approximately 6 years. Within this time frame we have reduced the unaccounted for water from 30 percent down to approximately 9 percent.

The city installed new meters throughout the system and added meters in those places that had no meters such as Carrie Blake Park, Dr Standard Park etc. The installation of new pressure reducing valves, isolation valves and new water mains further improved the system.

The reduced use of unmetered potable water from fire hydrants for dust control, street washing, vehicle washing and landscape watering has also provided a great reduction in the unaccounted for water. As a bonus, class "A" water is now used for many of those items listed above, which has allowed total production of water to increase at a much smaller rate than consumption.

1998 and 2003 Lost and Unaccounted for Water

Year	Total Production (gpd)	Total Metered Consumption (gpd)	Lost and Unaccounted for Water (gpd)	Percent of Total Production
1998	805,863	553,649	252,214	31.3%
2004	855,695	787,239	68,456	9%
Number of Years	Increased Production	Increased Consumption	Reduced Water Loss	System Improvements
6 years	49,832 gpd	233,590 gpd	183,756 gpd	22.9%

**Water System Improvements Since 1995 that have contributed to the reduction of
Lost and Unaccounted for Water**

Capital Improvement and Developer Driven Projects

- Construction of 1.7 MG Reservoir
- Drilling of Port Williams Well No. 1
- Installation of 5th Ave. Pressure Reducing Valve (PRV) and Booster Station
- River Road PRV
- 3rd Avenue PRV
- Washington Street PRV
- Drilling of Port Williams Well No. 2
- New Electronic Meter Installation (system wide replacement of all meters)
- On going Waterline and Hydrant repair

Installation and replacement of Water Lines both by the City and Developers

6"	8"	10"	12'	16"	Total
1,721 ft	15,422 ft	16,736 ft	24,560	5,368	63,807

(12 miles)