

# Domestic Water Management

## *Fixture Renovation or Replacement?*

*By: Frank Fix, Master Plumber*

*“To get a feeling for the extravagancies of the United States, all one really has to do is study how we handle our drinking water in this country. We collect it, filter it, chlorinate it, and yes, even fluoridate it, and then we put about 8 ounces of urine in a couple gallons of it and flush it down the drain.”*

**John M. Belcher, Greenleaf Energy Management Conference, October, 1998 [www.uea.com](http://www.uea.com)**

Today, with water/sewer costs rising rapidly across the country, many Facility Managers are taking a sharp pencil to the problem in order to find the best solutions to reduce costs. The passage of the National Energy Act (NEA) in 1994 made it mandatory for all new toilet fixtures to NOT use more than 1.6 gallons per flush (gpf). While this dramatic drop in water use (from an existing standard use of 3.5 gallons to 5 gallons per flush) has worked fairly well in most new construction projects, it has had some serious consequences when the new *low flow* fixtures are used to replace those in older facilities.

The primary concern today when replacing plumbing fixtures, with new *low flow* units, is not whether the fixtures themselves will function properly, but whether an older sewer system will continue to clear effectively when two-thirds of the fluid flow is removed from the sewage component. While the first fixtures to meet the NEA's requirement of 1.6 gpf were less than reliable and often failed to clear with a single flush, manufacturers eventually remedied this problem with new and better designs.

Unfortunately, there is no such easy fix for older sewer systems. A waste line that is twenty to fifty years old (or older) no longer has the same “carry capacity” that it once did, when installed as shiny new pipes. For this reason, the older the system, the less inclined we are to recommend *Replacement* as a viable alternative for reducing water/sewer costs.

Just to clarify our terminology, *Replacement* means removing the entire old fixture and replacing it with a new one. *Renovation* means keeping the old fixture and rebuilding the flush valve (using Conservacap) to make it flush more effectively with less water. By producing a new flush cycle of 2.75 gallons, *Renovation* provides an interim step between the old 3.5 gallons and the new 1.6 gallon flush cycle. *Renovation* saves about 50% as much water as *Replacement* (but this remaining 50% can be very important to older sewer systems). Also, *Renovation* can be done for a fraction of the *Replacement* cost (usually less than 5%), and be accomplished with a minimum of confusion and downtimes for restrooms. A Conservacap Renovation usually produces a Return On Investment of from 100 to 400 percent, which is why we often refer to it as “*The Low Cost Solution For Reducing Water/Sewer Costs.*”

There are however situations when the need to modernize makes *Replacement* an absolute must. Older fixtures that are stained, chipped and cracked are unsightly and in most cases no longer have a useful life. Unfortunately, “older fixtures” usually mean “older sewer systems.” For this reason, we think it is always a good idea when budgeting for total fixture replacement, in older facilities, to include a substantial contingency figure for sewer improvements. These funds may be used for something as simple as replacing long lateral lines or enlarging right angle turns.

Over the years our company has been concerned about installing new 1.6 gpf low flow fixtures in older high rise buildings that have questionable sewer systems. We have successfully installed different makes of renovated flush valves on older china fixtures. Such was the case of the BellSouth Tower in Atlanta. This twenty year old, 45 story building had over 600 Coyne-Delaney flush valves which were expensive to maintain and used a tremendous amount of water. The China fixtures, on the other hand, were in excellent condition. Our staff replaced the Coyne-Delaney flush valves with new Sloan valves that were retrofitted with Conservacap to use only 2.75 gallons per flush instead of the previous 4.5 gallons required by the old fixtures. Despite the added expense of replacing entire flush valves, the water savings produced by this renovation paid back the entire installation costs in less than 3 years, and the facility staff was relieved of a tremendous maintenance burden. (Please review the case study *BellSouth Office Tower* at [www.conservacap.com](http://www.conservacap.com) )

On several occasions we have been chastised by our environmental friends for not saving as much water with *Renovation* as we could with *Replacement*. What these well meaning people don't understand is that the use of water is not like the use of electricity, where the light is either on or off. Water use is directly tied to functionality. If the shower doesn't remove the shampoo from your hair or the tap doesn't fill up your teapot without requiring more of your valuable time, you are not going to be interested in the savings produced. Likewise, if a toilet doesn't clear the bowl with a single flush and a sewer system doesn't continue to function well after a conversion, someone has made a mistake, and it just may be an expensive one to correct.

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