THE SPIGOT
from the NORTH DAKOTA RURAL WATER SYSTEMS ASSOCIATION

Water system debris at the receiver.

'Pigging Out' Isn't Just for Family Gatherings

A happy pig ready for work.

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The cool, clear, clean water that we enjoy from our taps takes a long journey. The raw water being drawn from groundwater or a body of surface water is transported through pipes to a treatment facility, finished water storage and finally through a system of pipes to the consumer.

The pipes that carry the water from source to consumer can gather sediments, water treatment residue, suspended minerals and a naturally occurring biofilm. Any of these items that may be present in the water lines can affect water quality. Issues commonly noted, are cloudy or discolored water or unpleasant odors or tastes.

Water system operators, using the best practices available, strive to reduce or remove the amount of material that may be in a water pipe. Using advanced filtration during treatment and scheduled maintenance to flush the water system are very helpful to limit the amount of debris that could be present in a potable water pipe. Normally, system flushing is adequate to provide the consumer with water that is clear, odor free and pleasing to the taste.

Under extreme circumstances, a method of cleaning the water pipes, called pigging or poly-pigging is utilized to remove stubborn deposits and biofilm. The term pigging originated in the oil and gas industry. A metallic projective was inserted into a metallic pipe, and as the projectile moved through the pipe, friction between the surfaces caused a pig-like squealing sound.

Pigging in a potable water system uses a variety of pigs, usually constructed from different densities of polyurethane foam, hence the term, poly-pigging. Poly-pigs are available in a variety of sizes and configurations based on the needs of the water system.

Pigging in a water system requires a pig launcher and a pig receiver, essentially points where a pig enters or exits the water system. Launchers and receivers are sometimes permanently installed in raw waterlines and problem areas. Community water distribution systems use disassembled fire hydrants to act as entry and exit points.

The pigging process is rather simple. The area of the water system to be cleaned is identified, system maps are reviewed to pipe size and type, and valve and hydrant locations are verified. The public is informed of the work to be done.

The area to be pigged is shut off and isolated from the rest of the distribution system. Fire hydrants are disassembled and readied for their function as pig launcher or receiver. Launcher hydrants are fitted with a pig launcher assembly. The assembly allows for a pig to be inserted, a fire truck connection to the launcher and pressure and flow monitoring.

Sending a pig through a water pipe is achieved by using the water and pressure from a fire truck to push the pig from the launcher to the main water line. Once the pig is in the main water line the fire truck is disconnected and a valve in the distribution system is opened to move the pig along.

We no longer hear the high-pitched squeal of the pig, since it is constructed of polyethylene, but the pig does give off a happy little grunt as it goes about its work.

As the pig moves through the water pipe, debris is dislodged and moves ahead of the pig, exiting the receiving hydrant. Based on the outcome of the pigging process, this procedure may be repeated until satisfactory results are obtained.

Finally, hydrants are re-assembled, the water lines are flushed, disinfectant levels are checked, and the clean water line is returned to service.

North Dakota Rural Water Systems Association is available to assist water systems with poly pigging.

Photo Credit: Julie Hein, NDRWSA Water Quality Action Specialist

Fire truck connected to the launcher.