What happens when you mix the sanitary flow from a large office and medical complex with flushable wipes? The answer is a nightmare for wastewater equipment and maintenance personnel.

The problem has been well documented with news, video, and newspaper coverage from across the United States. According to one clean water agency official, the public is being duped by manufacturers into believing that “flushable” wipes are safe for use in sewer and septic systems. Flushing wipes down the toilet has become a major problem for wastewater facility operators and, the problem has only worsened in recent years.

The problem is both operational and financial.

New York City alone claims that more than $18 million has been spent over the past 5 years to remedy wipe related problems within their fourteen wastewater treatment plants.

In the Southwest, while visiting a regional reclamation center, a Tucson, Arizona, based news crew documented “white wipes were everywhere”. The operator suspects that the wipes are not biodegrading as fast as the general public is being led to believe. The wipes cake the walls and eventually get stuck in the sewers and clog pumps and pipes. When the blockages occur, there is just one way to clear them, by hand.

In Vancouver, Washington, sewer officials performed their own experiment after spending over $1 million replacing eleven pumps which were routinely clogging due to
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wipe ingestion. They dyed lots of wipes labeled “flushable” and sent them on a one mile journey through the system. They did not break up.

One of the major producers of flushable wipes claims that the problem is caused by products not meant to be flushed. They explain that flushable wipes, when used as directed, break up after flushing and clear properly maintained toilets, drain lines, sewers, pumps and septic and municipal treatment systems.

*Consumer Reports* performed tests that dispute manufacturer’s claims. The magazine ran vortex and mixer tests on several major “flushable” wipe brands that claimed to be safe for sewer and septic systems. After ten minutes of agitation there was no breakdown of the wipes. *CR* states that the public needs to understand what's safe to flush and what is not. Their advice, “do not flush flushable wipes.”

Until industry standards for all wipes meet wastewater handling equipment requirements, an informed and responsive public is needed to minimize system downtime and the resulting costs to taxpayers.

But, we all know regardless of warnings and education, the problem will never go away completely. Therefore, waste handling equipment must be upgraded to handle the existence of wipes in the system.

Traditionally, municipal systems employ numerous smaller capacity lift stations to move raw sewage and wastewater from individual sanitary drain lines to main sewers leading to treatment plant intakes. Small lift station pumps are particularly susceptible to clogging since their solids handling capability is limited. These units typically allow
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One pump company has attacked the problem head-on by developing a pump that will shred wipes and other system solids making them safe for wastewater systems.

BJM Pumps has long been recognized as leader in submersible, solids handling pumps for industrial and municipal services. BJM Pumps engineers have developed a dual shredding technology which features radial and axial shredding elements. This design obliterates wipes and other hard to handle solids in the waste stream.

Brian Mitsch PE, VP of Operations and Engineering for BJM Pumps, outlined the new patent pending, RAD-AX™ Shredder pump technology. “Incorporating both radial shredding and axial cutting achieves optimum results on hard, to near impossible to pump liquids containing fibrous solids like wet wipes.”

He explained how it works. “The Radial Shredding is achieved by a rotating cutter bar with serrated edges, which traps and shreds solids against the sharp grooves of the radial cutting ring. Wipes and other fibrous debris..."
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are efficiently ripped apart. The complimentary Axial Cutting utilizes dual cutting elements operating in tandem to multiply the shearing action. As the material exits the radial shredding area, the axial cutting components shear any remaining pieces using multiple cutting bars. The impeller design expedites the flow and hydraulic performance, preventing wrapping and clogging.”

The BJM Pumps Series SKG pump features RAD-AX™ shredding elements that are cast in hardened 440C Stainless Steel (Rockwell hardness above 55C) for maximum service life. The patent-pending RAD-AX™ design provides unsurpassed solids passage efficiency through its impeller and volute and is available only in the BJM Pumps SKG product line. Available with 2, 3, or 5HP high torque 4-pole motors, these pumps are perfect for smaller waste water stations.

A Case Story: Wiping Out a Wastewater Pumping Problem

FoxRock Properties owns and operates two massive office and medical complexes in Norwell, MA. The first of the neighboring properties is Longwater Place, a 27,000 square foot office building, part of a larger 26-acre campus including 84,000 square feet of corporate offices and a 160,000 square-foot wellness center. Longwater Place incorporates a full cafeteria, and fitness center, featuring a gymnasium with squash courts and locker/shower facilities.

The adjoining property is South Shore Medical Center. The 85,000 square-foot facility comprises 100 medical examination rooms, 70 medical offices, and a complete range of diagnostic equipment.

With the size of these commercial buildings, you can easily imagine the wastewater handling challenges faced by property management. There are 30 bathrooms and 64 toilets throughout the complex. Flow content includes sanitary waste, wipes, and feminine hygiene products flushed by staff, patients, and visitors. All of it travels through the sewer lines of both properties and is funneled into an outside 10,000 gallon
over-flow tank. The wastewater is then pumped through a 4-inch PVC discharge pipe over one-eighth of a mile from the tank into the municipal sewer system. Two solids-handling submersible pumps are at the heart of the system.

Although not required by local regulations, FoxRock Properties maintains this pumping system to ensure that discharges to the municipal sewer system can be handled effectively by the local treatment facilities.

The property manager for FoxRock, Dan Snyder explains, “Given the buildings’ populations, professional range of clients and types of services provided, it is expected that we would see more than our fair share of flushables.” He went on, “In the past we experienced frequent failures as wipes blocked screens protecting the pumps and wrapped around impellers, clogging the volute, and eventually burning out the pump’s submersible motors.” Even with a back-up pump in place, the service interruptions and maintenance costs became unacceptable.” The average pump service life was under 1.5 years.

After one of the 460-volt submersible pumps failed again, Snyder decided to ask the water and waste equipment specialists at Williamson New England Electric Motor and Pump Company to take a look at the problem and recommend a solution to the pump failures.

Jae Wilson, Service Manager at Williamson New England Electric Motor and Pump Company reviewed the system and its hydraulic requirements including the difficult-to-pump wastewater content.
Although there are numerous solids-handling pumps available, none presented the perfect solution. Research indicated that the heavy wipe content would still tend to wrap and clog pumps with traditional non-clog impellers. The resulting failure meant lifting the pump, disassembling and manually clearing the blockage, and possibly replacing the motor.

Jae consulted with one of his premier pump suppliers, BJM Pumps which manufactures a wide range of non-clog submersible shredder pumps for industrial and municipal services. The timing could not be better. BJM Pumps offered Jae an opportunity to install one of the first of a new line of shredder pumps, the SKG Series with RAD-AX™ technology. This new design would be perfect for the application since it used both radial shearing and axial cutting to pass hard to pump items such as wipes.

The required pump was immediately available and quickly installed.

One important advantage was immediately noticeable. Most non-clogs, including the second wastewater sump on the FoxRock property, need to be surrounded by a screen. The solids and debris that get caught in that screen, need to be routinely cleared by hand. The BJM Pumps SKG does not require a screen. A post installation inspection revealed no debris in the sump.

Dan Snyder, “So far I am very happy with the pump. It was installed in July, 2014 and continues to operate without clogging.”
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It is impossible to prevent non-flushable materials from entering the wastewater system but at least FoxRock Properties now has the optimum pump in place to minimize the possibility of clogging. It should also improve the downstream conditions since any solids pumped from the property into the municipal system can be easily handled.

About FoxRock Properties

Offering a full range of services, from property acquisition and development to brokerage and property management, FoxRock is one of the fastest growing commercial real estate firms in the greater Boston metro area. Founded in 2007, the company has acquired a portfolio totaling more than a million square-feet—the bulk of which are office buildings situated on the South Shore, from Quincy to Plymouth. For more information visit www.foxrockproperties.com

About Williamson New England Electric Motor and Pump Company

Williamson New England Electric Motor and Pump Company was founded in February 1944 in Brookline Village, Massachusetts. The business became so successful that it was necessary to find a facility large enough to house its multi-million dollar product and parts inventories and repair shop. The new facility in Chelsea has enabled WECO to grow and prosper in new product sales, repairs and service for both residential and industrial customers. WECO offers a broad line of pumps, electric motors, compressors, and generators. For more information visit williamsonneelectric.com

About BJM Pumps

BJM Pumps is headquartered in Old Saybrook, Conn. and has been providing fluid handling solutions for industrial and municipal services since 1983. Over its thirty-three year history, BJM Pumps has grown quickly by supplying world class pumps and accessories, priced competitively, through its global network of stocking distributors.