

Where Moving Wastewater Is All Downhill

Town finds efficiency with single source lift station technology.

The town of Wilson, WY—nestled along serene Fish Creek—is home of the famous Teton Pass. In the winter, Teton Pass is used by thousands of visitors as a backcountry skiing and snowboarding playground, with acres of snow-covered terrain. In the summer, Teton Pass offers everything from downhill mountain biking to casual day hikes surrounded by an abundance of colorful wildflowers. Each year, the area grows in popularity, bringing new tourism and population growth alike.

In this rugged terrain of Wyoming, however, where temperatures can range from sub zero to 100 degrees in the span of a mere six months, managing the city's sewer system can be challenging, to say the least. To be successful, the engineering team at the Wilson Sewer District (WSD) carefully studies current operations as well as changes on the horizon, including the potential uses of vacant land and the consideration of how that land will be developed for short-term and long-term planning. WSD is responsible for overseeing the sewer and water needs of the local residents, and it is this team of engineers who are responsible for keeping things flowing in the right direction.

With the assistance of Nelson Engineering and Water Works Industries, Inc., the area waste management distributor that serves and consults with the WSD regarding strategic design, WSD erected five lift stations, spanning 13 miles of pipeline, to service the area. Gorman-Rupp Pump Company (www.gormanrupp.com) lift stations were selected for the project,

based on the company's reputation for excellence as well as its ability to set large six-, eight-, and ten-ft diameter wet wells with completely integrated, packaged lift stations. In addition to these stations, two more lift stations were also installed in the heart of Wyoming's ski district, Teton Village. Another lift station is being planned in the near future to accommodate the area's unprecedented growth—all of which are pumping into the same force main. From there, waste is pumped to a larger lift station, which moves the waste across the Snake River, encompassing yet another 13,000 ft of force main.

When deciding upon a strategy for effective waste management, WSD weighed, of equal importance to the technology, the durability of the proposed equipment. Selecting pumps that could withstand constant use and harsh weather conditions was of the uppermost importance. Subsequently, the construction and engineering of Gorman-Rupp JSV Series-equipped lift stations was begun. Specifically, the technology was selected for its durability, as the pumps are constructed of cast iron and engineered to last. "We're using these lift stations to pump sewage and wastewater to our central systems," shares Jon Wagner, an operator with the Wilson Sewer District. "To serve a community as diverse as ours requires a lot of additional equipment ... and a lot of safety issues."

From the start, the climate and elevation had a significant influence on equipment decisions as well. In the planning stages of the operation, the team knew they weren't dealing with a

standard platform and a typical waste management challenge. Specifically, as high groundwaters plague the area, a pumping solution that was easy to install—and easy to maintain—became imperative. And, in the end, installation of the lift station was complete in just a half day's time. "We pulled them off the truck, set them, and we were done," boasts Wagner. "The reliability of this technology just speaks for itself. The entire lift station is a reliable piece of equipment. They take very little maintenance."

The ease of installation was a relief to Norton and his team because it allowed them to avoid additional and potential problems. "These stations have to be sized and the pumps balanced with precision so that we can pump each station into the same force main without overriding one of the others," adds Bob Norton of Nelson Engineering. "In an area that's as crucial to a community as waste management, reliability and ease of maintenance are of vital importance. If these systems fail, we have sewage backing up into people's houses or spilling into the river."

Power Breeds Confidence

Even though a single submersible pump could do the job, WSD employs a duplex pump system to prevent unnecessary emergencies and to help effectively plan for the continued flow of the system. Per the plan, each pump is strategically alternated. In doing so, the authority has the ability to pull a pump that goes down without disrupting the overall service of the area while the necessary repairs are being made.

The district can also run on “lead and lag” option with the pump stations—an effective and beneficial strategy for situations similar to Wilson’s whereby the amount and level of the wastewater can often become unpredictable. But even with two pumps running concurrently, depending on the amount of water to be pumped, the volume of water may become unmanageable. In these cases, the pump station automatically shifts to an alarm mode, notifying the operator that the standby pump is operating. The operator can easily adjust the on/off-alarm settings. Additionally, the 12V DC level controls and a standby generator that drive the pump in the event of a power failure further enhance the auto-start feature. When power is restored, the electric motor operation resumes automatically.

WSD particularly likes the idea of “a single source of responsibility” for all the parts of the station. Gorman-Rupp lift

stations encompass a total, single source pumping solution, including not only pumps, but electronics, controls, and pressure switches to keep Wilson up and running. “All of the controls, all of the valves, all of the pumps are from one supplier, and we don’t ever have any finger pointing. That makes it very easy,” shares Wagner.

“We’ve used these specific pumps and the lift station package in a diverse set of applications and have always found them to be superior,” offers Norton. “I’ve frequently specified them in competitive bidding processes, because they’ve always given us the best price and can meet or beat all of the criteria that we’ve had for maintenance and service.”

Yet another advantage WSD found with the lift station package was a large spare parts inventory, available through the manufacturer’s headquarters within 48 hours. Further, WSD was pleased to

discover that many of the necessary parts used to repair pump components that wore out were interchangeable from lift station to lift station. “The key here is that we can replace a worn component very quickly with readily available parts. It is absolutely critical that these pumps run 24 hours a day, seven days a week,” adds Wagner. “To a municipality, that’s peace of mind. It’s also one of the things that we take very seriously.”

Another feature of the lift station that makes maintenance easier for the WSD crew is the fact that all of the pumping system’s controls and valves are stored in an easily-accessible above-ground fiberglass enclosure. The structure reduces the amount of time needed for maintenance and routine servicing. In addition, the enclosure is corrosion-, mildew-, and vandal-resistant, and extremely compact, making space issues for the operators a thing of the past.

