

Smart lift station backup plans include both.

Power vs. Pumping

If you had the choice of backup power or backup pumping for your lift station contingency plan, which would you choose? As more sewer authorities throughout North America face the need for reliable lift station construction, upgrades and maintenance, the age-old question of contingency planning comes to the forefront. Traditionally, planning boards chose to install backup electric submersible pumps or diesel-powered generators. Now more utilities are turning to a lift station assurance plan that includes an independently powered

backup pump that can meet system demands during wet weather, scheduled maintenance, new construction, or emergency repair.

Sewage lift stations are necessary in most wastewater systems to raise liquids from lower elevations to higher elevations. Because sanitary sewer overflows (SSOs) impact the environment, lift station pumping must be reliable, continuous, and able to respond to varying flow demands regardless of day, hour, or availability of electricity.

Traditional contingency planning has involved backup electrical power for existing electric submersible sewage pumps. A duplex lift station typically contains a primary pump designed to handle peak flow rates and a secondary pump to handle the primary pump's load in case of a failure. Since stations are engineered with enough pumps to handle normal and peak demands, supplying alternative power in an outage has seemed the most cost-effective and logical approach to achieve reliability. Diesel-powered generators traditionally provided



While these electric submersible pumps were being replaced inside the wet well ...



... these temporary backup pumps supplemented the flow during the replacement. Photos: Godwin Pumps.

electrical power in an outage; however, many sewage spills have occurred because of pump or backup power gear failures, storm surges, or power outages.

For decades, surface-mounted, diesel-driven trash pumps have been a staple of temporary sewer bypassing applications. Now, the permanent lift station market can benefit from these same features.

Backup pumping is simple because the automatic self-priming pump set is a

stand-alone unit, independent of utility line power and lift station pump control. Start and stop controls are provided by either a pressure transducer or float switches located in the wet well, which activate the diesel- and natural-gas-driven pumps when the wet well sewage level rises to a predetermined height. Automatic priming removes air from the suction line, creating a vacuum that allows the sewage to rise, which then primes the pump. The pump

set continues to operate and pump the required flow, then shuts off when either the wet well is lowered or the electricity is restored and the primary system retakes control. Thus, the

The backup pumping system and lift station pump system are separate.

emergency backup pumping system and the lift station pump system are separate and do not rely upon each other.

When comparing backup power to backup pumping, remember that:

- If failure occurs with the generator, transfer switch, control panel, or electric submersible pumps, standby generators that create electrical power are useless.

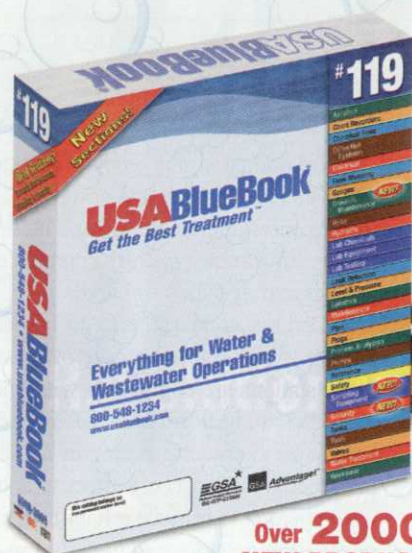
- Backup pumping increases flexibility to perform repairs or preventive maintenance on permanently installed pumps, reducing the repair or replacement costs associated with unforeseen failures.

- Initial and ongoing costs are greater with generators. A diesel generator and transfer switch can cost \$5,000 to \$10,000 more than a diesel backup pump. Generators usually are load-tested annually to ensure reliable power generation in emergencies, at costs significantly higher than those associated with flow testing an automatic priming emergency backup pump. In some locations, only contract electricians are qualified to work on a failed generator. On the other hand, operators routinely handle the flow testing of automatic priming emergency backup pumps at no appreciable cost.

A complete backup pump station offers collection systems many benefits. The ability to schedule and perform maintenance, continue pumping during repair, accommodate new construction, and supplement the primary station during stormwater infiltration or power outages are some reasons planning boards choose backup pumping. A reliable self-starting unit that is independent of electric power reduces the risks of mechanical failure associated with both traditional lift stations and generator-based contingency plans. For a price comparable to generator installation, collection systems can use backup pumping to assure lift station redundancy. **PW**

— Stephanie E. Morgan is a technical writer with Godwin Pumps, Bridgeport, N.J.

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