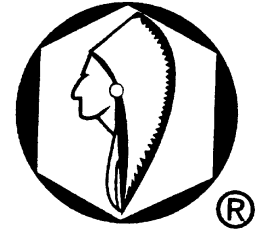


Pumping Solutions



Difficult Pumping Applications
from Blackhawk Environmental Company

A PUMP FOR DIFFICULT APPLICATIONS

THE ANCHOR PUMP 101A LIFTS QUALITY GROUNDWATER SAMPLES FROM 700 FEET BELOW LANDFILL SURFACE

High standards are imperative when you're operating a municipal solid waste landfill handling 325,000 tons of waste generated annually by a population of more than 115,000 people living in a region famed for its highly scenic environment. After years of trying, the bar for quality performance at Deschutes County's Knott Landfill in Bend, Oregon, has been raised by finding the means to pump reliable groundwater samples from 700 feet below the surface with consistent results.

Prior to 1999, Deschutes used the baling method for purging and sampling groundwater. The results were inconsistent, with frequent "hits" in samples involving oil and debris. Since the groundwater is sampled every six months and monitored for compliance to an extensive list of requirements, this method proved very problematic and time-consuming. There was no pump available on the market that could do the job. Electric pumps were too difficult to use; pneumatic pumps could not pump from 700 feet down. Consultants were brought in to analyze the situation and recommended that Blackhawk Environmental Co. be contacted to custom design and develop a pump for this difficult application.



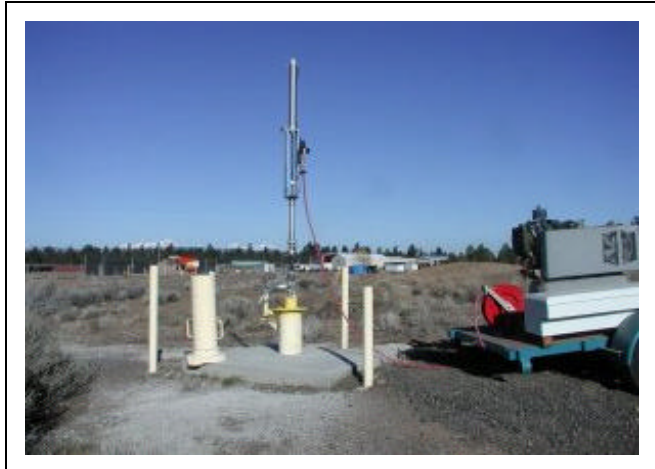
Enter Chad Centola, Knott Landfill operations manager, in January 1999. One of the first priorities of his new job was to conduct the first groundwater sampling using the new pneumatic Anchor Pump 101A from Blackhawk Environmental. Unfortunately, during the initial sampling events, the stroke speed could not be controlled. The piston kept getting bound up in the pump body and some of the parts separated. Working in tandem, Centola and Blackhawk Environmental worked toward a solution. "Blackhawk was very cooperative and the pump improved with each new round of sampling. Blackhawk was determined to give us a functional pump that would do what we required. They even did research on deep wells, which are primarily used in the petroleum industry and came up with new ideas for our situation. Blackhawk completely re-designed the Anchor Pump Drive Motor, resulting in a substantially improved, easier to control unit. Now, the new Anchor Pump installed in September 2001 does the job!" said Centola.

Blackhawk's Anchor Pump 101A at Deschutes

The key difference is that the stroke system for this Anchor Pump Drive Motor is regulated by physical pressure on switches on the drive motor. Prior drive motors used a pressure logic system. If the downstroke was going too fast, the piston pump would bind up in the pump body too down the well and, sometimes, even damaging the pump piston. Additionally, the pressure logic system would freeze up on occasion when temperatures, which can get quite low in Bend, plummeted.

Another component of note, the pump inlet is at the bottom of the pump, so that the pump acts like a syringe, sucking liquid into the pump with every stroke for highly reliable and consistent sampling. Liquid is pulled into the pump intake, and the pump operates consistently whether the pumping application is clean or dirty. The positive displacement action resists slowdown or stoppage even in the most sticky or oily situations. The pump drive mechanism is positioned on top of the wellhead enabling the operator to see whether the pump is running or not.

“The simplicity of the improved Anchor Pump is excellent. There are so few moving parts in the well to cause problems. The controls on the top are very important, making it easy to install, inspect, trouble shoot, maintain and repair. The system is lightweight and easy to handle. We move the above-well Anchor Piston Pump Drive Motor from well to well. There is a dedicated downhole portion of the pump in each individual well, which eliminates any potential for, cross-contamination. I’m actually looking forward to the next groundwater sampling event this spring. After the last round I was very pleased,” Centola stated.



The controls on the top of the Blackhawk Anchor Pump 101A make it easy to install, inspect, trouble shoot, maintain and repair.

Blackhawk Environmental Company’s Anchor Pump® is specially designed to lift liquid from depths exceeding 700 feet deep and is ideal for pumping hot, dirty, silty, slimy materials...particularly oil, leachate and landfill gas condensate. Unlike other pumps, where discharge performances are limited to the inlet air pressure, the Anchor Pump is designed to pump to the lowest possible level and can be installed in wells as small as 2" in diameter.

The Anchor Pump is a plunger pump, with a reciprocation action, that mechanically recovers fluid from the well bottom, independent of the well’s liquid level, while maintaining a constant flow recovery rate. It features a top head drive oil well sucker rod pump that effectively recovers thick oily liquid. Its smooth controlled flow recovery has the ability to tune speed and strength of the recovery to the yield of the formation being pumped.

The Anchor Pump’s deep recovery capabilities can produce 400 psi of pressure. Anchor Pump can be set for a flow range of 0 to 11 US GPM. Anchor Pumps feature top head mechanical-drive mechanisms and uncomplicated controls, making installation and on-site maintenance easy - even under the toughest conditions.

Blackhawk Environmental Co. specializes in manufacturing quality pumps and controls for demanding pumping applications. Blackhawk pumps can be powered pneumatically or electrically and can work in hazardous or potentially hazardous environments. For over ten years, Blackhawk pumps have been successfully operating in a wide range of pumping applications across the United States. Blackhawk’s pumps are custom manufactured in a variety of sizes and designs depending on the application.



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