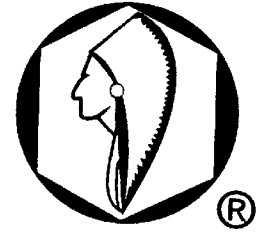


Piston Pumping Solutions - LNAPL Recovery

*Difficult Pumping Applications from
Blackhawk Environmental Company*



52,000 GALLONS LATER, BLACKHAWK PISTON PUMPS CONTINUE TO GO 140 FEET DEEP TO CLEAN UP MASSIVE GASOLINE SPILL – AND BLACKHAWK'S LNAPL RECOVERY TIP IS KEY TO KEEPING COSTS DOWN AND RECOVERY RATES HIGH!

On July 30, 2003, gasoline sprayed 50 feet into the air near a large city in the United States contaminating soil and groundwater as the result of a break in the pipeline used by a major U.S. pipeline partnership to transport fuel. The initial report that 10,000 gallons of gasoline were involved underestimated the situation. The local newspaper reported that "52,000 gallons of fuel had been pumped from a groundwater aquifer and that figure will climb as cleanup efforts continue." Doing the job at the three-acre site, where other pumps did not do an adequate job, are 11 Trident and Electric Anchor Piston Pumps manufactured by Blackhawk Environmental Company, Glen Ellyn, IL.



Initially air-lift pumps were used in the eleven 4-inch diameter recovery wells. These were able to recover liquid from the 140-foot depth where the free product plume was located. However, these pumps recovered both product and groundwater, which was undesirable.

One of the Blackhawk Piston Pumps with LNAPL Recovery Tip pumping product only from 140 ft. depth after massive gasoline spill caused by break in fuel pipeline.

Blackhawk Piston Pumps are the only pumps that could reach the depth, pump the product without disturbing the product (emulsification), and provide controlled drawdown and pump rate, according to the staff engineer for the environmental management and consulting engineering company contracted for the cleanup. Remediation is being accomplished using three Blackhawk electric, explosion-proof Anchor Pump 101Es at the wells near the double-wall steel tanks used to hold recovered product; two Blackhawk pneumatic Trident DT01 Piston Pumps; and six standard electric 101E pumps, which were the first Blackhawk pumps brought in to replace the air-lift pumps because electric power was available in the field. Each of these pumps uses a special LNAPL recovery tip, which is the key to keeping costs down and recovery rates high.

Blackhawk's LNAPL Recovery Tip Attachment, an automated skimming system for free product recovery, is designed to recover only hydrocarbon liquids, not groundwater, from two inch or larger wells. Using the LNAPL tip with the Blackhawk Piston Pumps results in a lower treatment cost because no excess water, which would have to be treated, is extracted with the product.

Recovery varies day to day from one gallon to 60 gallons per day depending on the well, with the initial recovery rate of 328 gallons per day having been the highest. Current recovery averages 28 gallons per day, and the results are impressive. At the start of the project, the gasoline to be recovered lay floating in a three-foot layer 140 feet below ground, where it had percolated down through the soil to the groundwater—now just one foot of product remains.

Going for the finish, Blackhawk's Anchor Electric and Trident Pneumatic Piston Pumps are designed with the pump inlet at the bottom of the pump, so that the pump acts like a syringe, extracting product from the bottom of the well and pulling liquid into the pump intake with every stroke. Blackhawk Piston Pumps are highly reliable and operate consistently whether the liquid is contaminated or not. The positive displacement action resists slowdown or stoppage, even when pumping viscous, sticky or oily liquids. All Blackhawk Piston Pumps are easy to install, inspect, trouble-shoot, and maintain because they are designed with the drive motor and controls on top, and have very few moving parts in the well to cause problems.

Field proven for over 15 years, Blackhawk pumps have been successfully operating in a wide range of pumping applications across the U.S. Blackhawk pumps can be powered pneumatically or electrically, work in hazardous or potentially hazardous environments, and are custom manufactured in a variety of sizes and designs depending on the application. Blackhawk Environmental Company specializes in manufacturing quality pumps and controls for demanding pumping applications.

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