

## The Uncertainty of Liner Installation

### Introduction

In the current economy, the search to save money on purchases and obtain reliability is common. Knowing this, the automobile industry began selling “certified pre-owned” vehicles. In years past, those same cars were simply referred to as used. But, as we know, the general public wants good, reliable cars at the least cost. So, rather than shop for a new vehicle, buyers are willing to settle for pre-owned (i.e., used and abused) cars. Well owners are not significantly different than the average car buyers.

### Pre-Used Wells

In the water industry, there is a corollary to the pre-owned vehicle. Well owners who rely on old wells often look to extend their useful life rather than drill and construct a new well. That’s easily understood and that thought typically leads to considering a liner. If it happens that the well in question was constructed with low-carbon steel that lacks corrosion resistance, the owner should know that corrosion is unavoidable. The scenario that plays out is for the slots to widen as corrosion proceeds, which causes the well to pump sand. Then, the owner searches for options to control or stop the sand production. Eventually, the option of a liner will usually be considered.

### No Guarantees

Among the options to control sand are partial, drop-off, or full-length liners, as discussed in Technical Memorandum 004-8 (2004). While liners can be effective, they are not fool-proof. In fact, there are significant uncertainties that are often overlooked. An example of this was experienced by a high-profile, extremely sophisticated governmental entity that elected to install a stainless steel, wire-wrapped screen liner with a graded filter pack in an aged well that was used for a pump-and-treat system. About 1 year after the liner was installed, the well resumed sanding. A downhole vide showed that the both blank casing and well screen segments of the liner had been perforated with random, small-diameter holes.

The contractor postulated that the holes were created when during pumping ground water passed through the old, unclogged slots in the outer (i.e., original) casing. It did so at high velocity. As the water jetted through the slots it eventually wore through the liner’s blank casing and wire-wrapped screen. This damage was clearly shown on the downhole video.

### Lessons Learned

In hindsight, one might suggest other options or diagnostics for the problem described above. For instance, perhaps the original casing could have been cut with a mills knife to open new slots before installing the liner. But that might well have exacerbated the sanding or caused a structural failure.

In the end, the cautionary notes offered here are: 1) carefully assess the condition of a well before deciding on a liner; 2) set realistic expectations for the outcome; and 3) consider and be prepared for the worst-case scenario. No matter what one does, a pre-used well will always be a pre-used well. Moreover, the unavoidable truth is that even reconditioned, pre-used wells will need to be replaced.

**References**

Roscoe Moss Company, 2004, Casing Liners for Large-Diameter Water Wells: An Approach to Repair Damaged Steel Casing or Screen, Technical Memorandum 004-8

**About the Author**

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