

## **Best Practices Guide: Reducing Water Production in Coalbed Natural Gas Fields**

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### **Executive Summary**

The purpose of this study is to reduce coalbed natural gas produced water, while maintaining existing gas production levels by using spectroscopic analysis to determine the reservoir parameters of gas content (GC), critical desorption pressure (CDP), and percent saturation on existing leases in the Powder River Basin (**Gleghorn T44N R77W, Mengel T44N R78W**). The net result from these key reservoir parameters will be the economic feasibility of each well and will be immediately available to guide the producer to more economic areas. More importantly, these parameters will help the producer avoid areas with little or no GC which would otherwise cost hundreds of thousands of dollars in infrastructure and water handling costs while further depleting aquifers that are not economically contributing to gas production in the basin. The study objects are:

- Use WellDog's proprietary technology to determine CDP, GC and percent saturation in 32 wells to help determine which wells have the best economic viability. We anticipate up to 33% of the wells will be uneconomical.
- Use CDP, GC and percent saturation to evaluate the economic production potential of each well, and identify and eliminate wells with a high potential to contribute large volumes of water without economic gas production.
- Document the number of wells that are plugged due to low GC while monitoring water and gas production statistics from the economically feasible wells throughout the duration of the study. These statistics will demonstrate the producer's volume of produced water can decrease while maintaining or increasing gas production.

In 2007, the Powder River Basin surpassed 4,000,000,000 barrels of cumulative water production and as development continues to move west, water production statistics continue to increase. Currently, over 7,300 wells are not economic gas producers and over 2,000 of those have only produced water. In order to decrease the volume of produced water in the PRB, it is essential to employ WellDog technology to identify areas of economic GC and avoid areas that will only contribute needless water production.