

Trends in Bakken Water and Oil Production

Bethany A. Kurz¹, Chantsalmaa Dalkhaa¹, Christopher L. Martin¹, Lawrence J. Pekot¹,
and Nicholas A. Azzolina¹

Abstract

Over the past decade of oil and gas development in the Bakken petroleum system, significant changes have occurred with respect to well completion practices. These changes include the use of different fracturing fluid types, increases in the volume of water and mass of proppant used during hydraulic fracturing, increases in the number of fracture stages per well, and decreases in lateral and stage spacing. While many factors can affect oil and water production from Bakken wells, a preliminary assessment was conducted by the Energy & Environmental Research Center (EERC) to evaluate fluid production as a function of fracturing fluid volume, proppant loading, and fracture stage spacing. This presentation will review the initial assessment performed by the EERC and summarize the EERC's ongoing effort to perform a multivariate analysis coupled with decline curve analysis to evaluate a larger array of factors and their potential influence on fluid production.

¹Energy & Environmental Research Center (EERC), University of North Dakota; 15 North 23rd Street, Stop 9018; Grand Forks, ND 58202-9018 USA

Bethany A. Kurz is a Principal Hydrogeologist at the EERC where she oversees applied research involving the evaluation of water and waste management strategies for the oil and gas industry, assessment of the fate and transport of chemical constituents in surface and groundwater, and the geochemical and geologic characterization of conventional and unconventional reservoirs for CO₂-based enhanced oil recovery and/or carbon storage. Ms. Kurz received an M.S. in Hydrogeology from the University of North Dakota in 1998 and a B.S. in Geochemistry from Bridgewater State University, Bridgewater, Massachusetts, in 1995.