The investigation of shallow natural gas occurrences within existing ground-water wells in Williams County, North Dakota was conducted over a non-consecutive day period from August 17 to September 20, 2009. A total of 167 wells were screened prior to the field component of the investigation. Of these, 131 wells sites, consisting of location and existing observation and stock wells, were selected to be verify their field signature (2) determine the actual existence of the well, (2) verify its location, and (3) perform flame ionization detector (FID) field screening for possible shallow natural gas occurrences. 167 wells were identified to be investigated. Each of the wells were field screened for the presence of combustible gases using a flame ionization detector (FID). A confirmatory gas analysis is typical in commercial natural gas is highlighted by the vertical green line at 70%. The concentration of methane (CH4) at the ground-water/air interface (GWI). The investigation of shallow natural gas occurrences within existing ground-water wells in Williams County, North Dakota was conducted over a non-consecutive day period from August 17 to September 20, 2009. A total of 167 wells were screened prior to the field component of the investigation. Of these, 131 wells sites, consisting of location and existing observation and stock wells, were selected to be verify their field signature (2) determine the actual existence of the well, (2) verify its location, and (3) perform flame ionization detector (FID) field screening for possible shallow natural gas occurrences. 167 wells were identified to be investigated. Each of the wells were field screened for the presence of combustible gases using a flame ionization detector (FID). A confirmatory gas analysis is typical in commercial natural gas is highlighted by the vertical green line at 70%. The concentration of methane (CH4) at the ground-water/air interface (GWI).