

Lab #: 718976      Job #: 41605      IS-69033      Co. Job#:  
Sample Name: BW\_Barclay\_68535      Co. Lab#:  
Company: Anadarko  
API/Well:  
Container: 125ml bottle  
Field/Site Name: BWSE/GWA\_Barclay\_68535\_Well  
Location: SWSW\_20\_3N\_66W  
Formation/Depth: Q2  
Sampling Point: 753245  
Date Sampled: 5/13/2019 14:50      Date Received: 5/16/2019      Date Reported: 6/10/2019

$\delta$ D of water ----- -106.8 ‰ relative to VSMOW

$\delta$ <sup>18</sup>O of water ----- -14.02 ‰ relative to VSMOW

Tritium content of water ----- na

$\delta$ <sup>13</sup>C of DIC ----- -10.6 ‰ relative to VPDB

<sup>14</sup>C content of DIC ----- na

$\delta$ <sup>15</sup>N of nitrate ----- na

$\delta$ <sup>18</sup>O of nitrate ----- na

$\delta$ <sup>34</sup>S of sulfate ----- na

$\delta$ <sup>18</sup>O of sulfate ----- na

Vacuum Distilled? \* ----- No

Remarks: WO#88561343

nd = not detected. na = not analyzed.

\*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

Lab #: 718980      Job #: 41606      IS-69033      Co. Job#: \_\_\_\_\_  
 Sample Name: BW\_Barclay\_68535      Co. Lab#: \_\_\_\_\_  
 Company: Anadarko  
 API/Well: \_\_\_\_\_  
 Container: IsoFlask  
 Field/Site Name: BWSE/GWA\_Barclay\_68535\_Well  
 Location: SWSW\_20\_3N\_66W  
 Formation/Depth: Q2  
 Sampling Point: 753245  
 Date Sampled: 5/13/2019 14:50      Date Received: 5/16/2019      Date Reported: 7/03/2019

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{18}\text{O}$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide -----	nd					
Helium -----	na					
Hydrogen -----	nd					
Argon -----	0.764				0.41	0.68
Oxygen -----	1.22					
Nitrogen -----	41.52				19	22
Carbon Dioxide -----	0.41					
Methane -----	54.89	-68.29	-246.1		29	20
Ethane -----	0.851	-31.11			0.50	0.62
Ethylene -----	nd					
Propane -----	0.246	-26.0			0.13	0.25
Propylene -----	nd					
Iso-butane -----	0.0395					
N-butane -----	0.0427					
Iso-pentane -----	0.0099					
N-pentane -----	0.0052					
Hexanes + -----	0.0017					

**Remarks:**

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.60

\*Addition of helium negates the ability to detect native helium and may negate the ability to detect hydrogen.  
 WO#88561343 Propane carbon isotope data obtained online via GC-C-IRMS. Insufficient butane and pentane concentrations for isotopic analysis.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. All gas component carbon isotope values are reported on a scale defined by a two point calibration of LSVEC and NBS 19. Isotopic composition of oxygen is relative to VSMOW, except for carbon dioxide which is relative to VPDB. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.