

Lab #: 728324 Job #: 42339 IS-69033 Co. Job#:
Sample Name: BW_7_3N_66W_Henrickson Co. Lab#:
Company: Anadarko
API/Well:
Container: 125ml bottle
Field/Site Name: BWSE/GWA_Henrickson_Water_Well
Location: SWSE_7_3N_66W
Formation/Depth: SP
Sampling Point: 752520
Date Sampled: 7/25/2019 12:42 Date Received: 7/30/2019 Date Reported: 8/20/2019

δ D of water ----- -108.2 ‰ relative to VSMOW

$\delta^{18}\text{O}$ of water ----- -14.19 ‰ relative to VSMOW

Tritium content of water ----- na

$\delta^{13}\text{C}$ of DIC ----- -12.4 ‰ relative to VPDB

^{14}C content of DIC ----- na

$\delta^{15}\text{N}$ of nitrate ----- na

$\delta^{18}\text{O}$ of nitrate ----- na

$\delta^{34}\text{S}$ of sulfate ----- na

$\delta^{18}\text{O}$ of sulfate ----- na

Vacuum Distilled? * ----- No

Remarks: WO#88363888

nd = not detected. na = not analyzed.

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

Lab #: 728350 Job #: 42341 IS-69033 Co. Job#:
 Sample Name: BW_7_3N_66W_Henrickson Co. Lab#:
 Company: Anadarko
 API/Well:
 Container: IsoFlask
 Field/Site Name: BWSE/GWA_Henrickson_Water_Well
 Location: SWSE_7_3N_66W
 Formation/Depth: SP
 Sampling Point: 752520
 Date Sampled: 7/25/2019 12:42 Date Received: 7/30/2019 Date Reported: 8/30/2019

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	δD ‰	$\delta^{18}\text{O}$ ‰	Dissolved gas cc/L	Dissolved gas ppm
Carbon Monoxide -----	nd					
Helium -----	na					
Hydrogen -----	nd					
Argon -----	0.737				0.28	0.47
Oxygen -----	1.94					
Nitrogen -----	34.95				12	14
Carbon Dioxide -----	0.78					
Methane -----	56.04	-61.46	-242.6		21	14
Ethane -----	3.72	-33.2			1.5	1.9
Ethylene -----	nd					
Propane -----	1.43	-29.2			0.56	1.0
Propylene -----	nd					
Iso-butane -----	0.127					
N-butane -----	0.219					
Iso-pentane -----	0.0298					
N-pentane -----	0.0195					
Hexanes + -----	0.0088					

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.74

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

WO#88363888

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. %.