

Helen Hartman #1

30-045-09630

Helen Hart #1

R.L. Bayless	
County: San Juan	Field: Helen Hart #1
State: NM	Location: Helen Hart #1
Sampled at: Braden Head	Formation:
Date: June 11, 2015	Depth: 0

H & M Precision Water Analysis Report

Sum +	mg/L	meq/L	Sum -	mg/L	meq/L
Potassium	0.0	0.00	Sulfate	816.0	16.99
Sodium	2,933.5	127.60	Chloride	4,500.0	126.93
Calcium	165.9	8.28	Carbonate	0.0	0.00
Magnesium	33.2	2.73	Bicarbonate	210.0	3.44
Iron	0.8	0.04	Hydroxide	0.0	0.00
Barium	1.0	0.01	-	0.0	0.00
Strontium	0.0	0.00	-	0.0	0.00
CATIONS	3,134.4	138.66	ANIONS	5,526.0	147.36

System Parameters

Total Dissolved Solids @180C	8,660	mg/L
Sample Temperature, F	70	F
Sample pH, standard units	8.89	Units
Dissolved Oxygen	0.0	ppm
Carbon Dioxide	0.0	mg/L
Total Sulfide, (TS)	0.0	mg/L
Sulfide ion, (S)	0	mg/L
Dissolved Hydrogen Sulfide, (TS-S)	0	mg/L
Specific Gravity	1.0067	
Resistivity, measured	0	ohm/m*3
Ionic strength	0.157	
Sulfate Reducing Bacteria	nd	
Aerobic Bacteria	nd	
Manganese Level	0.5	mg/L

Scaling Tendency

CACO3			CASO4		
Temp F	Stiff Davis	A	Actual	Calculated	S
32	0.88	83			
50	1.06	92	8.28	36.63	-28.35
68	1.26	100	8.28	37.10	-28.83
77	1.36	103	8.28	37.57	-29.29
86	1.46	106	8.28	37.86	-29.59
104	1.69	110	8.28	37.98	-29.70
122	1.92	114	8.28	37.09	-28.81
140	2.17	117	8.28	36.18	-27.91
158	2.44	118	8.28	35.25	-26.98
176	2.71	119			

BASO4 SCALE POSSIBLE

YES

Water Analysis Pattern

NOTE: Stiff Davis Index

- indicates undersaturation. Scale formation negative.
- 0 indicates the water is at saturation point. Scale unlikely.
- + indicates supersaturation. A positive scaling condition exists.

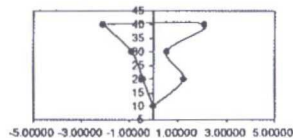
NOTE: Skirman Method Calcium Sulfate 'S' Index

- indicates undersaturation. Scale formation negative.
- 0 indicates the water is at saturation point. Scale unlikely.
- + indicates supersaturation. A positive scaling condition exists.

NOTE: A Index, worst possible case. Assumes 100% precipitation.

- Units = pounds of scale produced / 1000 bbls. of water.
- A Index <= 0 Scale formation negative.
- A Index > 0 Scale formation positive.

40 30 20 10 0 10 20 30 40

Approved: Zech Schaff
06/12/15

v4.01