

30-045-26047



H&M Precision Products
Water Analysis Report

Company: SouthLand Royalty
Location: CANDELARIA ETAL 1E
Field: 0
Sample Date: June 7, 2018

API#
County & State: (blank)

CANDELARIA ETAL 1E

Sampled At: WH
pH: 10.51
Sample Temperature: 70 °C
Manganese: 10 mg/L
BaSO4 Scale Possible: YES

Cations

Sodium: 303.5 mg/L
Calcium: 107.1 mg/L
Magnesium: 44.982 mg/L
Iron: 3.6 mg/L
Barium: 2 mg/L
Total 461.182 mg/L

Residuals

Chemical Residuals: na PPM.
Amine Residuals: NA PPM.

Current Treatments

Not Currently Treating (blank) (blank)

Total Dissolved Solids @ 180°C: 1857.182 mg/L
Specific Gravity: 1.0015
Ionic Strength: 0.037
CaCO3 Scaling Tendency @ 104°F: 93.7144913
Units for scaling tendency=pounds of scale produced per 1000 bbls of water.

Anions

Sulfate: 536 mg/L
Chloride: 500 mg/L
Bicarbonate: 360 mg/L
Total 1396 mg/L

Bacteria Culture Results *Cultures are incubated for 21 days--results may be from a previous sample.*

Last Injection Date: na
Acid Producing Bacteria Culture Bottles Positive: na bottles
Sulfate Producing Bacteria Culture Bottles Positive: na bottles

Well Snap Shot	Sampled At	Manganese mg/L	Iron mg/L	Scaling Tendency @ 104°F	Driver
June 7, 2018	WH	10	3.6	93.71	CUST
January 0, 1900	0	0	0	0.00	0
January 0, 1900	0	0	0	0.00	0
January 0, 1900	0	0	0	0.00	0





2030 Afton Place
Farmington, NM 87401
(505) 325-6622

Analysis No: SR180224
Cust No: 72550-10970

30-045-26047

Well/Lease Information

Customer Name: SOUTHLAND ROYALTY
Well Name: CANDELARIO ETAL #1E; CSG
County/State: SAN JUAN NM
Location:
Field:
Formation: BASIN DAKOTA
Cust. Stn. No.:

Source: CASING
Well Flowing:
Pressure: 90 PSIG
Flow Temp: DEG. F
Ambient Temp: DEG. F
Flow Rate: MCF/D
Sample Method: Purge & Fill
Sample Date: 06/07/2018
Sample Time: 7.00 AM
Sampled By: DEAN EMERY
Sampled by (CO): SOUTHLAND

Heat Trace:

Remarks:

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	1.7769	1.7572	0.1960	0.00	0.0172
CO2	0.5765	0.5701	0.0990	0.00	0.0088
Methane	81.7822	80.8774	13.9110	826.00	0.4530
Ethane	5.4858	5.4251	1.4720	97.08	0.0570
Propane	5.6843	5.6214	1.5710	143.02	0.0865
Iso-Butane	1.2368	1.2231	0.4060	40.22	0.0248
N-Butane	1.4938	1.4773	0.4730	48.73	0.0300
I-Pentane	0.5791	0.5727	0.2120	23.17	0.0144
N-Pentane	0.4238	0.4191	0.1540	16.99	0.0106
Hexane Plus	0.9608	0.9502	0.4300	50.64	0.0318
Total	100.0000	98.8936	18.9240	1245.86	0.7340

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0036
BTU/CU.FT IDEAL: 1248.7
BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1253.3
BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1231.5
DRY BTU @ 15.025: 1278.4
REAL SPECIFIC GRAVITY: 0.7364

CYLINDER #: 4141
CYLINDER PRESSURE: 93 PSIG
ANALYSIS DATE: 06/07/2018
ANALYSIS TIME: 10:34:52 AM
ANALYSIS RUN BY: PATRICIA KING

GPM, BTU, and SPG calculations as shown above are based on current GPA constants.

GPA Standard: GPA-2261

GC: Danalyzer Model 500 Last Cal/Verify: 06/07/2018

GC Method: C6+ Gas



SOUTHLAND ROYALTY
WELL ANALYSIS COMPARISON

Lease: CANDELARIO ETAL #1E; CSG
Stn. No.:
Mtr. No.:

CASING
BASIN DAKOTA

06/07/2018
72550-10970

Smpl Date: 06/07/2018
Test Date: 06/07/2018
Run No: SR180224

Nitrogen: 1.7769
CO2: 0.5765
Methane: 81.7822
Ethane: 5.4858
Propane: 5.6843
I-Butane: 1.2368
N-Butane: 1.4938
I-Pentane: 0.5791
N-Pentane: 0.4238
Hexane+: 0.9608

BTU: 1253.3
GPM: 18.9240
SPG: 0.7364



2030 Afton Place
Farmington, NM 87401
(505) 325-6622

Analysis No: SR180225
Cust No: 72550-10975

Well/Lease Information

Customer Name: SOUTHLAND ROYALTY
Well Name: CANDELARIO ETAL #1E; TBG
County/State: SAN JUAN NM
Location:
Field:
Formation: BASIN DAKOTA
Cust. Stn. No.:

Source: TUBING
Well Flowing: N
Pressure: 90 PSIG
Flow Temp: DEG. F
Ambient Temp: DEG. F
Flow Rate: MCF/D
Sample Method:
Sample Date: 06/07/2018
Sample Time: 7.00 AM
Sampled By: DEAN EMERY
Sampled by (CO): SOUTHLAND

Heat Trace: N
Remarks:

Analysis

Component::	Mole%:	Unnormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.2309	0.2274	0.0250	0.00	0.0022
CO2	1.3075	1.2876	0.2240	0.00	0.0199
Methane	86.8518	85.5295	14.7660	877.20	0.4811
Ethane	6.9445	6.8388	1.8630	122.90	0.0721
Propane	1.9434	1.9138	0.5370	48.90	0.0296
Iso-Butane	0.5065	0.4988	0.1660	16.47	0.0102
N-Butane	0.4920	0.4845	0.1560	16.05	0.0099
I-Pentane	0.3053	0.3007	0.1120	12.21	0.0076
N-Pentane	0.1827	0.1799	0.0660	7.32	0.0046
Hexane Plus	1.2354	1.2166	0.5530	65.12	0.0409
Total	100.0000	98.4776	18.4680	1166.18	0.6779

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBILITY FACTOR (1/Z): 1.0031
BTU/CU.FT IDEAL: 1168.9
BTU/CU.FT (DRY) CORRECTED FOR (1/Z): 1172.5
BTU/CU.FT (WET) CORRECTED FOR (1/Z): 1152.1
DRY BTU @ 15.025: 1196.0
REAL SPECIFIC GRAVITY: 0.6798

CYLINDER #: 4208
CYLINDER PRESSURE: 85 PSIG
ANALYSIS DATE: 06/07/2018
ANALYSIS TIME: 10:55:40 AM
ANALYSIS RUN BY: PATRICIA KING

GPM, BTU, and SPG calculations as shown above are based on current GPA constants.

GPA Standard: GPA-2261

GC: Danalyzer Model 500

Last Cal/Verify: 06/07/2018

GC Method: C6+ Gas



SOUTHLAND ROYALTY
WELL ANALYSIS COMPARISON

Lease: CANDELARIO ETAL #1E; TBG
Stn. No.:
Mtr. No.:

TUBING
BASIN DAKOTA

06/07/2018
72550-10975

Smpl Date: 06/07/2018
Test Date: 06/07/2018
Run No: SR180225

Nitrogen: 0.2309
CO2: 1.3075
Methane: 86.8518
Ethane: 6.9445
Propane: 1.9434
I-Butane: 0.5065
N-Butane: 0.4920
I-Pentane: 0.3053
N-Pentane: 0.1827
Hexane+: 1.2354

BTU: 1172.5
GPM: 18.4680
SPG: 0.6798