



## ANNUAL REPORT OF PRESSURE MONITORING, FLUID INJECTION AND ENHANCED RECOVERY

Complete all blanks - add pages if needed. Copy to be retained for five (5) years after filing date.

OPERATOR: License # \_\_\_\_\_  
Name: \_\_\_\_\_  
Address 1: \_\_\_\_\_  
Address 2: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ + \_\_\_\_\_  
Contact Person: \_\_\_\_\_  
Phone: ( \_\_\_\_\_ ) \_\_\_\_\_  
Lease Name: \_\_\_\_\_  
Well Number: \_\_\_\_\_

API No.: \_\_\_\_\_  
Permit No.: \_\_\_\_\_  
Reporting Year: \_\_\_\_\_  
(January 1 to December 31)  
\_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_ Sec. \_\_\_\_ Twp. \_\_\_\_ S. R. \_\_\_\_  E  W  
(a/a/a/a)  
\_\_\_\_\_ feet from  N /  S Line of Section  
\_\_\_\_\_ feet from  E /  W Line of Section  
County: \_\_\_\_\_

### I. Injection Fluid:

Type (Pick one):  Fresh Water  Treated Brine  Untreated Brine  Water/Brine  
Source:  Produced Water  Other (Attach list)  
Quality: Total Dissolved Solids: \_\_\_\_\_ mg/l Specific Gravity: \_\_\_\_\_ Additives: \_\_\_\_\_  
(Attach water analysis, if available)

### II. Well Data:

Maximum Authorized Injection Pressure: \_\_\_\_\_ psi Injection Zone: \_\_\_\_\_  
Maximum Authorized Injection Rate: \_\_\_\_\_ barrels per day  
Total Number of Enhanced Recovery Injection Wells Covered by this Permit: \_\_\_\_\_ (Include TA's)

III.	Month:	Total Fluid Injected BBL	Maximum Fluid Pressure	Total Gas Injected MCF	Maximum Gas Pressure	# Days of Injection
	January	_____	_____	_____	_____	_____
	February	_____	_____	_____	_____	_____
	March	_____	_____	_____	_____	_____
	April	_____	_____	_____	_____	_____
	May	_____	_____	_____	_____	_____
	June	_____	_____	_____	_____	_____
	July	_____	_____	_____	_____	_____
	August	_____	_____	_____	_____	_____
	September	_____	_____	_____	_____	_____
	October	_____	_____	_____	_____	_____
	November	_____	_____	_____	_____	_____
	December	_____	_____	_____	_____	_____
	<b>TOTAL</b>	_____	_____	_____	_____	_____



LINN OPERATING  
MICHAEL BELLOMY  
HASKELL KS

KELLY D SWDW  
FLOWLINE

Report Date: 01-22-2016    Sampled: 01-11-2016  
Sample #: 3076                      at 0000  
  
Sample ID: 117376

**CATIONS**

Calcium (as Ca)	16660
Magnesium (as Mg)	3938
Barium (as Ba)	0.204
Strontium (as Sr)	355.80
Sodium (as Na)	62705
Potassium (as K)	927.50
Lithium (as Li)	13.75
Ammonia (as NH <sub>3</sub> )	0.00
Aluminum (as Al)	0.00
Iron (as Fe)	7.44
Manganese (as Mn)	0.0120
Zinc (as Zn)	1.40
Lead (as Pb)	0.00

**ANIONS**

Chloride (as Cl)	154400
Sulfate (as SO <sub>4</sub> )	550.00
Bromine (as Br)	0.00
Dissolved CO <sub>2</sub> (as CO <sub>2</sub> )	210.00
Bicarbonate (as HCO <sub>3</sub> )	36.60
Carbonate (as CO <sub>3</sub> )	0.00
Oxalic acid (as C <sub>2</sub> O <sub>4</sub> )	0.00
Silica (as SiO <sub>2</sub> )	0.00
Phosphate(as PO <sub>4</sub> )	0.00
H <sub>2</sub> S (as H <sub>2</sub> S)	0.500
Fluoride (as F)	0.00
Nitrate (as NO <sub>3</sub> )	0.00
Boron (as B)	25.31

**PARAMETERS**

Calculated T.D.S.	228250
Molar Conductivity	422869
Resistivity	2.36
Sp.Gr.(g/mL)	1.16
Pressure(atm)	1.00
pCO <sub>2</sub> (atm)	0.00951
pH <sub>2</sub> S(atm)	< 0.001
Temperature (°F)	51.00
pH	6.09

**COMMENTS**

HASKELL KS



LINN OPERATING  
MICHAEL BELLOMY  
HASKELL KS

KELLY D SWDW  
FLOWLINE

Report Date: 01-22-2016    Sampled: 01-11-2016  
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**SATURATION LEVEL**

Calcite (CaCO <sub>3</sub> )	0.0970
Aragonite (CaCO <sub>3</sub> )	0.0861
Witherite (BaCO <sub>3</sub> )	< 0.001
Strontianite (SrCO <sub>3</sub> )	0.00173
Calcium oxalate (CaC <sub>2</sub> O <sub>4</sub> )	0.00
Magnesite (MgCO <sub>3</sub> )	0.0232
Anhydrite (CaSO <sub>4</sub> )	0.411
Gypsum (CaSO <sub>4</sub> *2H <sub>2</sub> O)	0.550
Barite (BaSO <sub>4</sub> )	0.183
Celestite (SrSO <sub>4</sub> )	0.133
Fluorite (CaF <sub>2</sub> )	0.00
Calcium phosphate	0.00
Hydroxyapatite	0.00
Silica (SiO <sub>2</sub> )	0.00
Brucite (Mg(OH) <sub>2</sub> )	< 0.001
Magnesium silicate	0.00
Iron hydroxide (Fe(OH) <sub>3</sub> )	< 0.001
Strengite (FePO <sub>4</sub> *2H <sub>2</sub> O)	0.00
Siderite (FeCO <sub>3</sub> )	0.0129
Halite (NaCl)	0.244
Thenardite (Na <sub>2</sub> SO <sub>4</sub> )	< 0.001
Iron sulfide (FeS)	0.0109

**MOMENTARY EXCESS (Lbs/1000 Barrels)**

Calcite (CaCO <sub>3</sub> )	-0.00414
Aragonite (CaCO <sub>3</sub> )	-0.00471
Witherite (BaCO <sub>3</sub> )	-26.17
Strontianite (SrCO <sub>3</sub> )	-0.377
Calcium oxalate (CaC <sub>2</sub> O <sub>4</sub> )	-0.00178
Magnesite (MgCO <sub>3</sub> )	-0.0157
Anhydrite (CaSO <sub>4</sub> )	-53.75
Gypsum (CaSO <sub>4</sub> *2H <sub>2</sub> O)	-34.81
Barite (BaSO <sub>4</sub> )	-0.533
Celestite (SrSO <sub>4</sub> )	-176.23
Fluorite (CaF <sub>2</sub> )	-1.29
Calcium phosphate	>-0.001
Hydroxyapatite	-215.73
Silica (SiO <sub>2</sub> )	-19.69
Brucite (Mg(OH) <sub>2</sub> )	< 0.001
Magnesium silicate	-72.20
Iron hydroxide (Fe(OH) <sub>3</sub> )	< 0.001
Strengite (FePO <sub>4</sub> *2H <sub>2</sub> O)	>-0.001
Siderite (FeCO <sub>3</sub> )	-0.0391
Halite (NaCl)	-66660
Thenardite (Na <sub>2</sub> SO <sub>4</sub> )	-89057
Iron sulfide (FeS)	-0.780

**SIMPLE INDICES**

Langelier	-0.117
Ryznar	6.32
Puckorius	5.91
Larson-Skold Index	8606
Stiff Davis Index	-0.194
Oddo-Tomson	-1.19

**BOUND IONS**

Calcium	16660	16528
Barium	0.204	0.204
Carbonate	0.177	< 0.001
Phosphate	0.00	0.00
Sulfate	550.00	76.20

**TOTAL**

**FREE**

**OPERATING CONDITIONS**

Temperature (°F)	51.00
Time(secs)	0.00

# DownHole SAT™ Water Analysis Report



JACAM LABORATORIES

## SYSTEM IDENTIFICATION

LINN OPERATING  
 KELLY D SWDW  
 MICHAEL BELLOMY  
 FLOWLINE  
 HASKELL KS

Sample ID#: 3076  
 ID: 117376  
 Report Date: 01-22-2016  
 Sample Date: 01-11-2016  
 at 0000

## WATER CHEMISTRY

### CATIONS

Calcium(as Ca)	16660
Magnesium(as Mg)	3938
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Sodium(as Na)	62705
Potassium(as K)	927.50
Lithium(as Li)	13.75
Iron(as Fe)	7.44
Field Iron(as Fe)	0.00
Ammonia(as NH <sub>3</sub> )	0.00
Aluminum(as Al)	0.00
Manganese(as Mn)	0.0120
Zinc(as Zn)	1.40
Lead(as Pb)	0.00

### ANIONS

Chloride(as Cl)	154400
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Carbonate(as CO <sub>3</sub> )	0.00
Silica(as SiO <sub>2</sub> )	0.00
Phosphate(as PO <sub>4</sub> )	0.00
H <sub>2</sub> S (as H <sub>2</sub> S)	0.500
Fluoride(as F)	0.00
Nitrate(as NO <sub>3</sub> )	0.00
Boron(as B)	25.31

### PARAMETERS

Temperature(°F)	51.00
T.D.S.	228250
Conductivity:	422869
Sample pH	6.09
Resistivity:	2.36

## SCALE AND CORROSION POTENTIAL

Temp. (°F)	Press. (atm)	Calcite CaCO <sub>3</sub>		Anhydrite CaSO <sub>4</sub>		Gypsum CaSO <sub>4</sub> *2H <sub>2</sub> O		Barite BaSO <sub>4</sub>		Celestite SrSO <sub>4</sub>		Siderite FeCO <sub>3</sub>		Mackawenite FeS		CO <sub>2</sub> (mpy)	pCO <sub>2</sub> (atm)
50.00	0.00	0.0951	-0.00418	0.415	-53.19	0.555	-34.20	0.190	-0.511	0.135	-175.02	0.0125	-0.0398	0.0574	-0.726	0.0780	0.00951
65.45	0.00	0.127	-0.00356	0.370	-59.20	0.479	-42.85	0.114	-0.927	0.116	-187.93	0.0187	-0.0312	0.0543	-0.744	0.216	0.00951
80.91	0.00	0.162	-0.00306	0.349	-59.85	0.422	-49.86	0.0724	-1.50	0.106	-191.78	0.0267	-0.0249	0.0506	-0.766	0.105	0.00951
96.36	0.00	0.201	-0.00265	0.347	-56.05	0.379	-55.29	0.0488	-2.25	0.101	-190.69	0.0367	-0.0202	0.0465	-0.790	0.138	0.00951
111.82	0.00	0.241	-0.00231	0.362	-49.06	0.374	-52.92	0.0344	-3.17	0.0973	-187.66	0.0484	-0.0166	0.0423	-0.816	0.146	0.00951
127.27	0.00	0.283	-0.00202	0.394	-40.26	0.390	-46.36	0.0247	-4.34	0.0936	-185.51	0.0622	-0.0139	0.0386	-0.844	0.127	0.00951
142.73	0.00	0.324	-0.00179	0.445	-30.83	0.404	-41.27	0.0179	-5.81	0.0897	-184.45	0.0780	-0.0117	0.0352	-0.874	0.105	0.00951
158.18	0.00	0.363	-0.00160	0.520	-21.68	0.416	-37.30	0.0132	-7.60	0.0858	-184.43	0.0948	-0.0100	0.0321	-0.905	0.0993	0.00951
173.64	0.00	0.395	-0.00145	0.626	-13.38	0.425	-34.21	0.00976	-9.75	0.0819	-185.42	0.112	-0.00871	0.0292	-0.939	0.0932	0.00951
189.09	0.00	0.415	-0.00136	0.775	-6.24	0.433	-31.85	0.00731	-12.28	0.0780	-187.40	0.127	-0.00768	0.0264	-0.976	0.0421	0.00951
204.55	0.00	0.422	-0.00131	0.984	-0.339	0.439	-30.07	0.00553	-15.20	0.0742	-190.42	0.138	-0.00690	0.0238	-1.02	0.0325	0.00951
220.00	0.171	0.404	-0.00137	1.27	4.45	0.440	-29.94	0.00420	-18.76	0.0701	-199.22	0.142	-0.00653	0.0240	-1.07	0.0435	0.0111

  

	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels	Lbs per xSAT 1000 Barrels			

Saturation Levels (xSAT) are the ratio of ion activity to solubility, e.g. {Ca}{CO<sub>3</sub>}/K<sub>sp</sub>. pCO<sub>2</sub> (atm) is the partial pressure of CO<sub>2</sub> in the gas phase. Lbs/1000 Barrels scale is the quantity of precipitation (or dissolution) required to instantaneously bring the water to equilibrium.

