



Rocky Mountain Area Laboratory
350 Cole Creek Road,
Evansville, WY 82636

Upstream Chemicals

REPORT DATE: 10/3/2018

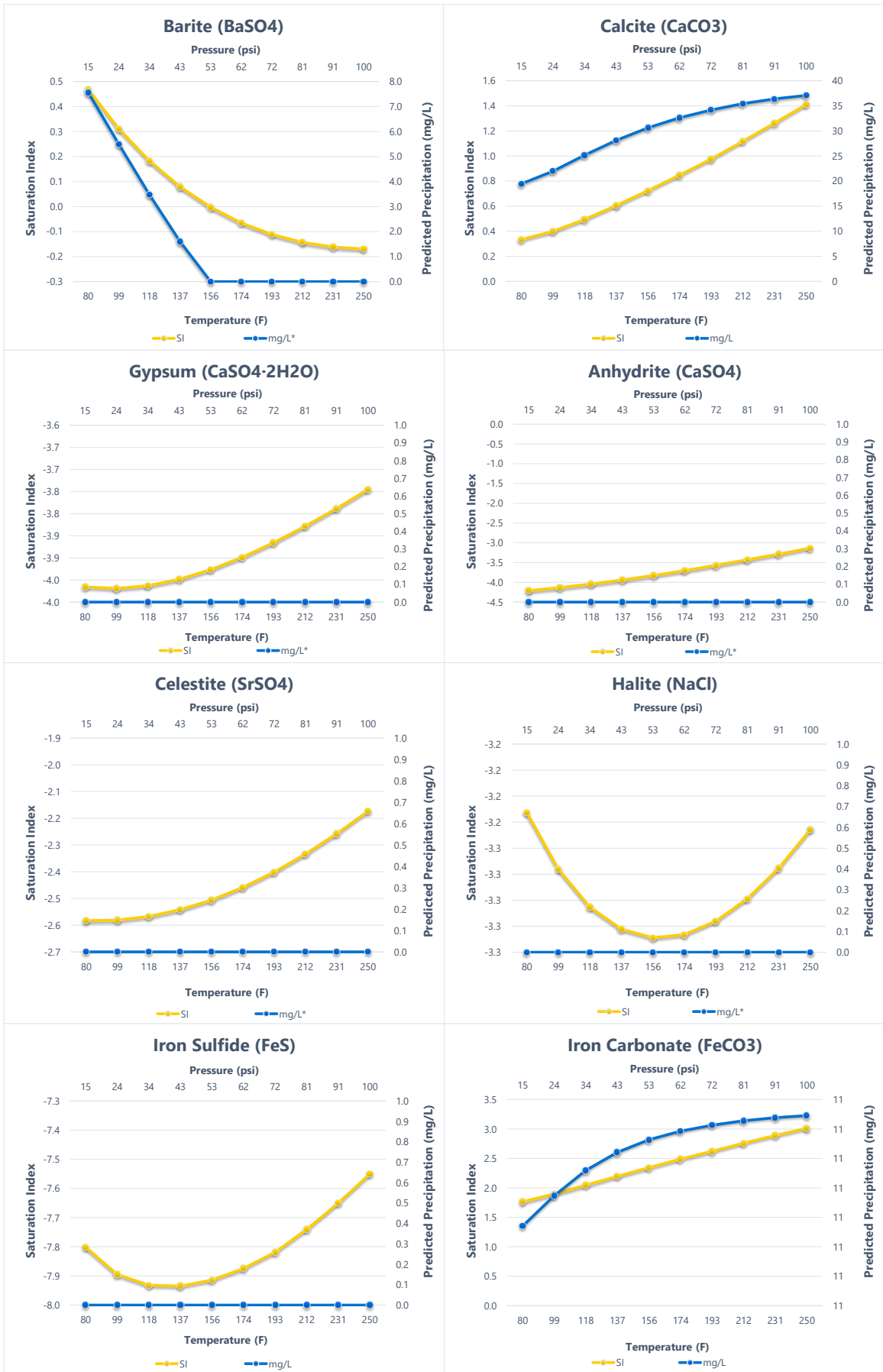
COMPLETE WATER ANALYSIS REPORT SSP v.2010

CUSTOMER: MUSTANG ENERGY
DISTRICT: WESTERN DIVIDE
AREA/LEASE: WAMSUTTER
SAMPLE POINT NAME: BLUE GRAVEL 5-35
SITE TYPE: WELL SITES
SAMPLE POINT DESCRIPTION: NOT PROVIDED

ACCOUNT REP: LESLIE REINBOLD
SAMPLE ID: 201812018610
SAMPLE DATE: 9/5/2018
ANALYSIS DATE: 10/3/2018
ANALYST: KS

MUSTANG ENERGY, WAMSUTTER, BLUE GRAVEL 5-35

FIELD DATA			ANALYSIS OF SAMPLE							
			ANIONS:		mg/L	meq/L	CATIONS:		mg/L	meq/L
Initial Temperature (°F):	250		Chloride (Cl⁻):		6871.0		193.8	Sodium (Na⁺):	5005.3	217.8
Final Temperature (°F):	80		Sulfate (SO₄²⁻):		9.6		0.2	Potassium (K⁺):	33.0	0.8
Initial Pressure (psi):	100		Borate (H₃BO₃):		20.7		0.3	Magnesium (Mg²⁺):	13.8	1.1
Final Pressure (psi):	15		Fluoride (F⁻):		ND			Calcium (Ca²⁺):	15.5	0.8
			Bromide (Br⁻):		ND			Strontium (Sr²⁺):	8.6	0.2
pH:			Nitrite (NO₂⁻):		ND			Barium (Ba²⁺):	9.0	0.1
pH at time of sampling:			Nitrate (NO₃⁻):		ND			Iron (Fe²⁺):	5.4	0.2
			Phosphate (PO₄³⁻):		0.2		0.0	Manganese (Mn²⁺):	0.1	0.0
			Silica (SiO₂):		18.5			Lead (Pb²⁺):	ND	
							Zinc (Zn²⁺):	0.0	0.0	
ALKALINITY BY TITRATION:			mg/L	meq/L						
Bicarbonate (HCO₃⁻):	1995.0	32.7					Aluminum (Al³⁺):	ND		
Carbonate (CO₃²⁻):	ND						Chromium (Cr³⁺):	ND		
Hydroxide (OH⁻):	ND						Cobalt (Co²⁺):	ND		
			ORGANIC ACIDS:		mg/L	meq/L	Copper (Cu²⁺):		ND	
aqueous CO₂ (ppm):	ND		Formic Acid:		ND		Molybdenum (Mo²⁺):	ND		
aqueous H₂S (ppm):	ND		Acetic Acid:		ND		Nickel (Ni²⁺):	ND		
aqueous O₂ (ppb):	ND		Propionic Acid:		ND		Tin (Sn²⁺):	ND		
			Butyric Acid:		ND		Titanium (Ti²⁺):	ND		
Calculated TDS (mg/L):	13985		Valeric Acid:		ND		Vanadium (V²⁺):	ND		
Density/Specific Gravity (g/cm³):	1.0069						Zirconium (Zr²⁺):	ND		
Measured Specific Gravity	ND						Lithium (Li):	ND		
Conductivity (mmhos):	ND									
Resistivity:	ND						Total Hardness:	112	N/A	
MCF/D:	No Data									
BOPD:	No Data									
BWPD:	No Data		Anion/Cation Ratio:				1.03	ND = Not Determined		



SCALE PREDICTIONS BASED ON FIELD PROVIDED DATA; FUTHER MODELING MAY BE REQUIRED FOR VALIDATION OF SCALE PREDICTION RESULTS.