RCVD MAY 25 '12
OIL CONS. DIV.

DIST. 3

ConocoPhillips

San Juan

Request for Alternative Use of Produced Water

Atlantic A #8 C

API # 3004535137
T31N R10W Sec 29 Unit G

May 23, 2012

Submitted by:

Paul Marken
Completion Supervisor

Please reply to: Crystal Tafoya at (505) 326-9837
Or: crystal.tafoya@conocophillips.com

Request for Alternative Use of Produced Water

1. COPC wishes to use 100% produced water as a base fluid for our stimulation of the Atlantic A #8 C. Plans are to use only this water to stimulate the Mesa Verde zone. The stimulation job will be completed no later than June 30, 2012. The legal description for the Atlantic A #8 C is as follows:

Location: 36° 52' 23.183"N 107° 54' 8.601" W : T31N R10W Sec 29 Unit G

API: 3004535137

2. The source of the produced water for this alternative use pilot test will be the Vasaly SWD #2. The water will be taken downstream from the second stage filtration, just upstream from the injection wellhead. This treated and filtered water will be transferred by pipeline to two 500 Bbl holdings tanks located on the Mar Vista SWD #1. Vacuum trucks will then haul this water to the Atlantic A #8 C. This will be a mixture of produced water from Dakota, Mesa Verde, Pictured Cliffs and Fruitland formations. Historic water sample from the Vasaly SWD #2 have averaged less than 11,000 ppm TDS. Our standard stimulation fluid, 2% KCl, averages over 21,000 ppm TDS. Analysis of water from Vasaly SWD #2 sampled on 4 May 2012 is attached as appendix A. The Vasaly SWD #2 is 100% owned by ConocoPhillips.

3. We do not anticipate any compatibility issues using water from Vasaly SWD #2 to fracture stimulate Atlantic A #8 C. The bulk of the water transported to Vasaly SWD #2 originates from the same formations we will be stimulating. API analyses of water from Vasaly SWD #2 indicates negligible scaling tendencies. Water samples from the Vasaly Com #1M, Marx Fed #1, Bruington LS #4P and Bruington Gas C #1E which are near Atlantic A #8 C, and are completed in the same target formation (MV) as Atlantic A #8 C were analyzed for compatibility with the Vasaly SWD #2 water sample. The analysis was performed at three different mix ratios (25% / 75%, 50% / 50%, 75% / 25%). This analysis indicates negligible scaling tendencies at all mix ratios. These water sample analyses are attached in appendix B.

4. A list of the wells disposing of water at the Vasaly SWD #2 is available on request.

5. We anticipate that we will use approximately 3,200 bbls of water to stimulate this well.
6. We will be storing the produced water on location in eight (8) 400 bbl frac tanks.
7. All fluids flowed back after the stimulation will be contained in a flowback tank, then transported to an approved disposal facility.

APPENDIX A

Water Analysis Vasaly SWD #2

BJ SERVICES
Farmington District Lab
Water Analysis Report

Test # 0

Customer/Well Information

Company:	Conoco Phillips	**Date:**	5/4/2012
Well Name:	Vasaly SWD 2	**Prepared for:**	Paul Marken
Location:	00-000-00000	**Submitted by:**	Shepherd, Dave
State:	San Juan County, NM	**Prepared by:**	Capehart, Daniel J.
Formation:	0	**Water Type:**	Produced
Depth:	0		

Background Information

Reason for Testing:	TDS
Completion type:	
Well History:	
Comments:	

Sample Characteristics

Sample Temp:	**79**	(°F)	**Viscosity:**	1cP
pH:	**6.95**		**Color:**	none
Specific Gravity:	**1.015**		**Odor:**	none
S.G. (Corrected):	1.019	@ 60 °F	**Turbidity:**	none
Resistivity (Meas.):	**0.90**	Ω-m	**Filtrates:**	0%

Sample Composition

		mg/l	me/l	ppm
CATIONS				
	Sodium (calc.)	3759	163.5	3703
	Calcium	180	9.0	178
	Magnesium	85	7.0	84
	Barium	0	0.0	0
	Potassium	**400**	10.2	394
	Iron	**25.00**	0.9	24 63
ANIONS				
	Chloride	6000	169.3	5911
	Sulfate	**1**	0.0	1
	Hydroxide	0	0.0	0
	Carbonate	< 1	----	----
	Bicarbonate	1342	22.0	1322
SUMMARY				
	Total Dissolved Solids(calc.)	11392		11224
	Total Hardness as CaCO3	801	16.0	789

Scaling Tendencies

CaCO3 Factor	242163.9	Calcium Carbonate Scale Probability -->	REMOTE
CaSO4 Factor	183.1568	Calcium Sulfate Scale Probability ------->	REMOTE

APPENDIX B

Water Analysis from adjacent producing wells

Bruington Gas C #1E

Baker Hughes

Production Water Analysis for

ConocoPhillips FARMINGTON, Bruington Gas C #1E ,Drilling

Representative: Sheperd, Dave		
Sample Date: 01/23/2012	**Lab Test No: 2012102313**	
Specific Gravity:	1.019	
TDS:	26896	
pH:	6.44	
Cations	**mg/L**	**as:**
Calcium:	216.14	Ca
Magnesium:	44.2	Mg
Sodium:	9168	Na
Iron:	86.12	Fe
Barium:	42.91	Ba
Strontium:	35.28	Sr
Manganese:	0	Mn
Anions	**mg/L**	**as:**
Bicarbonate:	488	HCO3
Carbonate:	0	CO3
Sulfate:	8	SO4
Chloride:	16700	Cl
Gases:	**mg/L**	**as:**
Carbon Dioxide:	100	CO2
Hydrogen Sulfide:	0	H2S
Lab Comments:		
Sales Comments:		

DownHole SAT Scale Prediction:	180	
Mineral Scale	**Saturation Index**	**Momentary Excess (lbs/1000 bbls)**
Calcite (CaCO3)	0.65	-0.3
Strontianite (SrCO3)	0.08	-8.49
Anhydrite (CaSO4)	0	-1862.68
Gypsum (CaSO4*2H2O)	0	-2356.99
Barite (BaSO4)	0.69	-5.03
Celestite (SrSO4)	0	-548.56
Siderite (FeCO3)	861.8	0.65
Halite (NaCl)	0	-604999.69
Iron sulfide (FeS)	0	-0.09

APPENDIX B

Water Analysis from adjacent producing wells

Bruington LS #4P

Baker Hughes

Production Water Analysis for

ConocoPhillips FARMINGTON, Bruington LS #4 P ,Drilling

Representative: Sheperd, Dave

Sample Date: 01/24/2012	**Lab Test No: 2012102316**	
Specific Gravity:	1.007	
TDS:	8590	
pH:	6.59	
Cations	**mg/L**	**as:**
Calcium:	133.23	Ca
Magnesium:	10.94	Mg
Sodium:	2825	Na
Iron:	39.52	Fe
Barium:	9.35	Ba
Strontium:	21.71	Sr
Manganese:	1.48	Mn
Anions	**mg/L**	**as:**
Bicarbonate:	244	HCO3
Carbonate:	0	CO3
Sulfate:	9	SO4
Chloride:	5210	Cl
Gases:	**mg/L**	**as:**
Carbon Dioxide:	250	CO2
Hydrogen Sulfide:	0	H2S
Lab Comments:		
Sales Comments:		

DownHole SAT Scale Prediction:	180	
Mineral Scale	**Saturation Index**	**Momentary Excess (lbs/1000 bbls)**
Calcite (CaCO3)	0.49	-0.34
Strontianite (SrCO3)	0.07	-5.96
Anhydrite (CaSO4)	0	-1276.07
Gypsum (CaSO4*2H2O)	0	-1593.14
Barite (BaSO4)	0.46	-7.94
Celestite (SrSO4)	0	-347.11
Siderite (FeCO3)	492.12	0.38
Halite (NaCl)	0	-563188.69
Iron sulfide (FeS)	0	-0.06

APPENDIX B

Water Analysis from adjacent producing wells

Marx Fed #1M

Baker Hughes

Production Water Analysis for

ConocoPhillips FARMINGTON, Marx Fed #1M ,Drilling

Representative: Sheperd, Dave		
Sample Date: 01/23/2012	**Lab Test No: 2012102314**	
Specific Gravity:	1.02	
TDS:	28826	
pH:	6.42	
Cations	**mg/L**	**as:**
Calcium:	299.4	Ca
Magnesium:	38.89	Mg
Sodium:	10018	Na
Iron:	106.64	Fe
Barium:	64.81	Ba
Strontium:	56.45	Sr
Manganese:	1.43	Mn
Anions	**mg/L**	**as:**
Bicarbonate:	366	HCO3
Carbonate:	0	CO3
Sulfate:	9	SO4
Chloride:	17700	Cl
Gases:	**mg/L**	**as:**
Carbon Dioxide:	350	CO2
Hydrogen Sulfide:	0	H2S
Lab Comments:		
Sales Comments:		

DownHole SAT Scale Prediction:	180	
Mineral Scale	**Saturation Index**	**Momentary Excess (lbs/1000 bbls)**
Calcite (CaCO3)	0.64	-0.23
Strontianite (SrCO3)	0.08	-5.96
Anhydrite (CaSO4)	0	-1785.68
Gypsum (CaSO4*2H2O)	0	-2274.33
Barite (BaSO4)	1.09	1.19
Celestite (SrSO4)	0	-541.45
Siderite (FeCO3)	721.4	0.46
Halite (NaCl)	0	-606178.38
Iron sulfide (FeS)	0	-0.08

APPENDIX B

Water Analysis from adjacent producing wells

Vasaly Com #1M

Baker Hughes

Production Water Analysis for

ConocoPhillips FARMINGTON, Vasaly Com #1M ,Drilling

Representative: Sheperd, Dave		
Sample Date: 01/23/2012	**Lab Test No: 2012102315**	
Specific Gravity:	1.013	
TDS:	18985	
pH:	6.4	
Cations	**mg/L**	**as:**
Calcium:	166.89	Ca
Magnesium:	30.53	Mg
Sodium:	6293	Na
Iron:	68.65	Fe
Barium:	17.67	Ba
Strontium:	25.94	Sr
Manganese:	0	Mn
Anions	**mg/L**	**as:**
Bicarbonate:	427	HCO3
Carbonate:	0	CO3
Sulfate:	19	SO4
Chloride:	11800	Cl
Gases:	**mg/L**	**as:**
Carbon Dioxide:	250	CO2
Hydrogen Sulfide:	0	H2S
Lab Comments:		
Sales Comments:		

DownHole SAT Scale Prediction:	180	
Mineral Scale	**Saturation Index**	**Momentary Excess (lbs/1000 bbls)**
Calcite (CaCO3)	0.47	-0.48
Strontianite (SrCO3)	0.06	-8.75
Anhydrite (CaSO4)	0	-1695.18
Gypsum (CaSO4*2H2O)	0	-2130.57
Barite (BaSO4)	0.93	-1.28
Celestite (SrSO4)	0.01	-473.74
Siderite (FeCO3)	667.49	0.5
Halite (NaCl)	0	-595904.94
Iron sulfide (FeS)	0	-0.09