

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martínez
Governor

John Bemis
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey
Division Director
Oil Conservation Division



Paul Marken
Completion Supervisor
Referred to Dollie Busse
ConocoPhillips Company
San Juan Business Unit
Phone: (505) 326-9837
Email: Dollie.L.Busse@conocophillips.com

July 9, 2012


Dear Ms. Busse,

The Oil Conservation Division ("Division") is in receipt of your request to beneficially use produced water to fracture treat the Stewart LS #8N API # 30-045-35330, UL-F, Sec 28, Twn 30N, R10W. In granting this beneficial use the Division agrees and requires that:

1. The aquifer is an exempted aquifer because it does not currently serve as a source of drinking water, and that cannot now and will not in the foreseeable future serve as a source of drinking water because it is hydrocarbon producing. 19.15.2.7.E.5 NMAC
2. One of the water samples from the producing wells adjacent to Stewart LS #8N have atypically low TDS for the San Juan Basin.
3. The produced water ConocoPhillips proposes to use for well stimulation averages less than 14,500 ppm TDS.
4. The produced water ConocoPhillips proposes to use in its pilot test is less than the TDS of the fluid used in a standard conventional well stimulation.
5. Notification is required to be given to the district office 24-72hrs prior to the commencement of hauling the produced water and shall include a schedule with beginning and ending dates.
6. All trucks hauling produced water to the location must have a copy of their approved C-133 and a copy of this letter in the truck.
7. This letter is to be in the trucks authorized to haul the produced water only for the time period supplied in the required notification.
8. Conoco is only authorized to haul water from downstream of the Vasely SWD #2 (API # 30-045-29936) second stage filtration system, which can be loaded into the trucks at the Vasely SWD #2 facility or the Mar Vista SWD #1 (API # 30-045-35126) facility.

9. Conoco is required to keep a log of the loads of produced water taken to the location and have it available upon request.

10. This approval will expire on July 31st, 2012

If you have any further questions, please feel free to contact Brandon Powell at 
Brandon.Powell@state.nm.us or 505-334-6178 xt 116.

Sincerely,



Charlie Perrin
Aztec District Manager
1000 Rio Brazos Road
Aztec, NM 87410



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OIL CONS. DIV.

DIST. 3

San Juan

Request for Alternative Use of Produced
Water

BP

Stewart LS #8N

API # 3004535330
T30N R10W Sec 28 Unit F

June 29, 2012

Submitted by:

Paul Marken
Completion Supervisor

Paul Marken 6/29/2012

Kyle Hampton
Completion Engineer

Kyle Hampton 6/29/2012

Please reply to: Dollie Busse at (505) 324-6104
Or: Dollie.L.Busse@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 Stewart LS #8N. Plans are to use only this water to stimulate the Dakota, Mancos and Mesa Verde zones. The stimulation job will be completed no later than August 15, 2012. The legal description for the Stewart LS #8N is as follows:

Location: 36° 47' 11.062"N 107° 53' 31.56" W : T30N R10W Sec 28 Unit F

API: 3004535330

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 holding tanks located on the Mar Vista SWD #1 site. Vacuum trucks will then haul this water to the Horton #1B. 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 14,500 ppm TDS. Our standard stimulation fluid, 2% KCl, averages over 21,000 ppm TDS. Analysis of water from Vasaly SWD #2 sampled on 23 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 Stewart LS #8N. 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 indicate negligible scaling tendencies. Water samples from the Bruington GC #1E, Bruington LS #4P, and Marx Fed #1M, which are near Stewart LS #4P and are completed in some of the same target formations (Dk, MV) as Stewart LS #4P, 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 available upon request.

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

5. We anticipate that we will use approximately 10,700 bbls of water to stimulate this well.

6. We will be storing the produced water on location in thirty (30) 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

Baker Hughes

Production Water Analysis for

ConocoPhillips FARMINGTON, Vasaly SWD #2 ,Drilling

Representative: Sheperd, Dave

Sample Date: 05/23/2012

Lab Test No: 2012115609

Specific Gravity:	1.011	
TDS:	14876	
pH:	7.47	
Cations	mg/L	as:
Calcium:	87.03	Ca
Magnesium:	0	Mg
Sodium:	4279	Na
Iron:	25.97	Fe
Barium:	3.41	Ba
Strontium:	14.44	Sr
Manganese:	0	Mn
Anions	mg/L	as:
Bicarbonate:	1159	HCO3
Carbonate:	0	CO3
Sulfate:	750	SO4
Chloride:	8500	Cl
Gases:	mg/L	as:
Carbon Dioxide:	250	CO2
Hydrogen Sulfide:	17	H2S
Lab Comments:		
Sales Comments:		

DownHole SAT Scale

Prediction:	70	
	Saturation	
Mineral Scale	Index	Momentary Excess (lbs/1000 bbls)
Calcite (CaCO3)	1.8	2.45
Strontianite (SrCO3)	1.27	1.36
Anhydrite (CaSO4)	0.02	-2759
Gypsum (CaSO4*2H2O)	0.04	-2260.45
Barite (BaSO4)	77.71	5.72
Celestite (SrSO4)	0.17	-134.82
Siderite (FeCO3)	959.88	6.49
Halite (NaCl)	0	-491601.19
Iron sulfide (FeS)	1746.14	11.17

APPENDIX B

Water Analysis from adjacent producing wells: Bruington GC #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

Saturation

Mineral Scale	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	
	Saturation	
Mineral Scale	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
Saturation

Mineral Scale	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