

State of Colorado  
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 Phone: (303)894-2100 Fax: (303)894-2109



DE	ET	OE	ES
<div>Received 6/9/2010 COGCC Rifle</div>			

SUNDRY NOTICE

Submit original plus one copy. This form is to be used for general, technical and environmental sundry Information. For proposed or completed operations, describe in full on Technical Information Page (Page 2 of this form.) Identify well or other facility by API Number or by OGCC Facility ID. Operator shall send an informational copy of all sundry notices for wells located in High Density Areas to the Local Government Designee (Rule 603b.)

1. OGCC Operator Number: 10071	4. Contact Name Scot Donato
2. Name of Operator: Bill Barrett Corporation	Phone: 303-812-8191
3. Address: 1099 18th Street, Suite 2300	Fax: 303-291-0420
City Denver State: CO Zip: 80127	
5. API Number 05-045-11797	OGCC Facility ID Number 417355
6. Well/Facility Name: BBC	7. Well/Facility Number 12D-24-692
8. Location (QtrQtr, Sec, Twp, Rng, Meridian): SENE, Sec. 23, T6S, R92W, 6th P.M.	
9. County: Garfield	10. Field Name: Mamm Creek
11. Federal, Indian or State Lease Number:	

Complete the Attachment  
Checklist

OP OGCC

Survey Plat		
Directional Survey		
Surface Eqpm Diagram		
Technical Info Page		
Other		

General Notice

☐ CHANGE OF LOCATION: Attach New Survey Plat (a change of surface qtr/qtr is substantive and requires a new permit)

Change of Surface Footage from Exterior Section Lines:		FNU/FSL		FEL/FWL
Change of Surface Footage to Exterior Section Lines:				
Change of Bottomhole Footage from Exterior Section Lines:				
Change of Bottomhole Footage to Exterior Section Lines:				

Bottomhole location Qtr/Qtr, Sec, Twp, Rng, Mer \_\_\_\_\_

Latitude _____	Distance to nearest property line _____	Distance to nearest bldg, public rd, utility or RR _____
Longitude _____	Distance to nearest lease line _____	Is location in a High Density Area (rule 603b)? Yes/No <input type="checkbox"/>
Ground Elevation _____	Distance to nearest well same formation _____	Surface owner consultation date: _____

GPS DATA:  
Date of Measurement \_\_\_\_\_ PDOP Reading \_\_\_\_\_ Instrument Operator's Name \_\_\_\_\_

<input type="checkbox"/> CHANGE SPACING UNIT	<input type="checkbox"/> Remove from surface bond
Formation _____ Formation Code _____ Spacing order number _____ Unit Acreage _____ Unit configuration _____	Signed surface use agreement attached _____

<input type="checkbox"/> CHANGE OF OPERATOR (prior to drilling): Effective Date: _____ Plugging Bond: <input type="checkbox"/> Blanket <input type="checkbox"/> Individual	<input type="checkbox"/> CHANGE WELL NAME From: _____ To: _____ Effective Date: _____
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<input type="checkbox"/> ABANDONED LOCATION: Was location ever built? <input type="checkbox"/> Yes <input type="checkbox"/> No Is site ready for Inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No Date Ready for Inspection: _____	<input type="checkbox"/> NOTICE OF CONTINUED SHUT IN STATUS Date well shut in or temporarily abandoned: _____ Has Production Equipment been removed from site? <input type="checkbox"/> Yes <input type="checkbox"/> No MIT required if shut in longer than two years. Date of last MIT _____
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<input type="checkbox"/> SPUD DATE: _____	<input type="checkbox"/> REQUEST FOR CONFIDENTIAL STATUS (6 mos from date casing set)
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<input type="checkbox"/> SUBSEQUENT REPORT OF STAGE, SQUEEZE OR REMEDIAL CEMENT WORK	*submit cbl and cement job summaries
Method used _____ Cementing tool setting/perf depth _____ Cement volume _____ Cement top _____ Cement bottom _____ Date _____	

☐ RECLAMATION: Attach technical page describing final reclamation procedures per Rule 1004.  
Final reclamation will commence on approximately \_\_\_\_\_ ☐ Final reclamation is completed and site is ready for inspection.

Technical Engineering/Environmental Notice

<input type="checkbox"/> Notice of Intent Approximate Start Date: _____	<input type="checkbox"/> Report of Work Done Date Work Completed: _____
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Details of work must be described in full on Technical Information Page (Page 2 must be submitted.)

<input type="checkbox"/> Intent to Recomplete (submit form 2)	<input type="checkbox"/> Request to Vent or Flare	<input type="checkbox"/> E&P Waste Disposal
<input type="checkbox"/> Change Drilling Plans	<input type="checkbox"/> Repair Well	<input type="checkbox"/> Beneficial Reuse of E&P Waste
<input type="checkbox"/> Gross Interval Changed?	<input type="checkbox"/> Rule 502 variance requested	<input type="checkbox"/> Status Update/Change of Remediation Plans
<input type="checkbox"/> Casing/Cementing Program Change	<input checked="" type="checkbox"/> Other: Pit liner investigation	for Spills and Releases

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct and complete.

Signed: _____	Date: 6/9/2010	Email: <a href="mailto:ddennison@billbarrettcorp.com">ddennison@billbarrettcorp.com</a>
Print Name: Doug Dennison	Title: Environemntal/Governmental Affairs Liaison	

COGCC Approved: \_\_\_\_\_ Title \_\_\_\_\_ Date: \_\_\_\_\_

CONDITIONS OF APPROVAL, IF ANY:

TECHNICAL INFORMATION PAGE



FOR OGCC USE ONLY

1. OGCC Operator Number:	10071	API Number:	05-045-11797
2. Name of Operator:	Bill Barrett Corporation	OGCC Facility ID #	417355
3. Well/Facility Name:	BBC	Well/Facility Number:	12D-24-692
4. Location (QtrQtr, Sec, Twp, Rng, Meridian):	SENE, Sec. 23, T6S, R92W, 6th P.M.		

This form is to be completed whenever a Sundry Notice is submitted requiring detailed report of work to be performed or completed. This form shall be transmitted within 30 days of work completed as a "subsequent" report and must accompany Form 4, page 1.

5. DESCRIBE PROPOSED OR COMPLETED OPERATIONS

The purpose of this sundry is to document the evaporation conditions that were present during the hydrostatic test performed at this facility on May 13-14, 2010. The results of the hydrostatic test were previously reported via a Form 4 Sundry Notice (document number 2606776). The meteorological data and pit water temperature data collected during this test are not complete enough for calculating potential evaporation using accepted methodologies. Bill Barrett Corporation (BBC) previously employed High Country Engineering, Glenwood Springs, CO to conduct a water loss analysis for a fresh water pond. This analysis included a detailed analysis of potential evaporation. At the current time, BBC is unable to release the water loss analysis, however, applicable portions of the evaporation analysis from that report are attached. This analysis indicated that the evaporation in the vicinity of this pit for May 2010 was calculated at 11.1 inches/month. Converting this rate of evaporation to a daily rate results in an approximate rate of evaporation of 0.36 inches/day. As noted in the equation provided in this analysis, the temperature of the water in the pit (pond) has a bearing on the evaporation rate - the higher the water temperature, the higher the rate of evaporation. The water that is stored in this and other pits operated by BBC is relatively warm, as indicated by the water temperatures of 69 and 71 degrees F measured on May 14, 2010. The pit water temperature on May 13, 2010 when the reduction of 0.5 inch in the water level of the pit was observed was not measured but would be expected to be higher than that measured on May 14, 2010. This warmer water temperature would result in a higher rate of evaporation of water from the pit, so the observed water loss on May 13, 2010 of 0.5 inches is not an unreasonable evaporative loss.

## II. WATER LOSS ANALYSIS

High Country Engineering was asked to evaluate water loss which is occurring in the pond, to determine if the water loss is more or less than would be expected for a pond located in this area.

HCE has been furnished baseline data, which includes a measurement of water loss over the test period together with associated climate conditions for the same test period. This information is included in Exhibit 1 below. HCE has evaluated this baseline data furnished along with other relevant available data provided by the Colorado Water Conservation Board, the Department of Energy and other available sources in an effort to determine if the measured water losses over the test period are normal or extraordinary for a pond located in the geographical area of the [REDACTED] pond.

### Exhibit 1

#### Bill Barrett Corporation

[REDACTED] Pond Level Recordings Township 6 South, Range 92 West, 6th PM

					Weather Conditions				
Date	Time	Measurement	In Flow	Temp avg	Avg.Dew Pt.	Avg. Humidity	Wind Mph	AVG.Wind Mph	Water Temp.
		(inches)	(Y/N)	(°F)	(See Daily Reports from NOAA for Detail)				(°F)
					<a href="http://weather.noaa.gov/weather/current/KRIL.html">http://weather.noaa.gov/weather/current/KRIL.html</a>				
4/28/2010	12:40pm	S-19 1/4"	N	59.2	24.9	28% SW 16-32		19.6	58
4/30/2010	5:39 PM	S-19"	N	34.6	24	66% WSW 8		6.3	50
5/4/2010	1:45pm	S- 18 1/4"	N	52.4	26	38% W 24-35		10.2	56
5/6/2010	10:36am	S-17 1/2"	N	50.4	24	36% NNW 25-35		14	50
5/10/2010	2:00pm	S-16 1/4"	N	55	24.5	31% WSW 15-32		14	58
5/11/2010	11:40am	S-16"	N	51.4	24.7	38% WSW 17 to 35		12.1	50
5/12/2010	1:30 PM	S-15 1/2"	N	41.1	27.7	60% W 15 to 22		18	52
5/13/2010	4:25 PM	S-15 1/2"	N	45.7	30.6	58% SSE 15		3.3	56
5/14/2010	2:45 PM	S-15 3/8"	N	48.6	33.3	58% W 13 to 17		3.3	60

				Average for			Average for MTD May	55
AVG for May		N		48.9	27.3	47% calm		

HCE has been informed that there has previously been pond remediation work, including several bentonite and polymer applications. This work was reportedly completed in an effort to establish a good seal and inhibit pond water from infiltrating into the soil.

While the purpose of this report is to determine whether water losses from the [REDACTED] pond are more or less than what would be expected from a pond in this area, the conclusions may also be used to determine whether prior treatments were effective and whether further treatments would be warranted to meet typical conditions of a newly constructed pond in this area.

Generally, losses in the pond can occur due to three different influences. The first is evaporation. Evaporation occurs at the water surface as water is vaporized into the air. Several factors effect evaporation including, temperature, humidity and wind, to name a few. Plant Transpiration will also contribute to water loss as plants absorb water from the source into their root systems. The third would be loss due to percolation into the ground, or infiltration. It is our understanding that the owner has never irrigated from this pond source, or has not removed water form the pond, so the measurements contained on Exhibit 1 should be considered reliable when determining loss through evaporation, transpiration and infiltration. In this specific case, another potential cause for loss of water could be a leak through an old (presumed) culvert that may have been installed when [REDACTED] was constructed. If this culvert does, in fact, exist it is highly plausible that it may not have been sealed-off appropriately. However, while an investigation should be done to determine whether or not this culvert exists, that investigation is beyond the scope of this report.

This report will estimate the effects of evaporation and infiltration. Transpiration at this location would likely be minimal due to the sparse amount of vegetation within the pond.

#### **A. EVAPORATION LOSS**

Evaporation losses are estimated by utilizing the following equation which was developed by the American Society of Heating Refrigeration and Air conditioning Engineers (ASHRAE).

$W = [A + (B)(V)](P_w - P_a)/H_v$  where: W = water evaporation rate, (lb/hr) per sq.ft. of pond surface area A = a constant = 95 (\*\*see note below) B = a constant = 37.4 (\*\*see note below) V = air velocity over the pond surface, miles/hr  $P_w$  = vapor pressure of water at the pond water temperature, inches of Hg  $P_a$  = vapor pressure of water at the air dewpoint temperature, inches of Hg  $H_v$  = heat of vaporization of water at the pond water temperature, Btu/lb

\*\*A study by the Department of Energy concluded that the ASHRAE equation was more accurate if A was taken as 68 (instead of 95) and if B was taken as 32 (instead of 37.4). That study may be read at the following website <http://www.eren.doe.gov/>. These numbers were used in the calculations.

Based on monthly averages as of May 14, 2010 including the average temperature of 48.9 degrees Fahrenheit, an average dew point of 27.3 degree Fahrenheit, an average pond temperature of 55 degrees Fahrenheit, and an average wind velocity of 7.5 mph the evaporation loss would be approximately 0.080320 lb/sf/hr. Converting this to inches of water per month equals 11.1”.