

## COGCC OIL AND GAS FIELD SCOUT CARD

Date 04/18/2016  
Document No. 2056188

FIELD NAME WOLF CREEK  
FIELD NUMBER 94010

### LOCATION

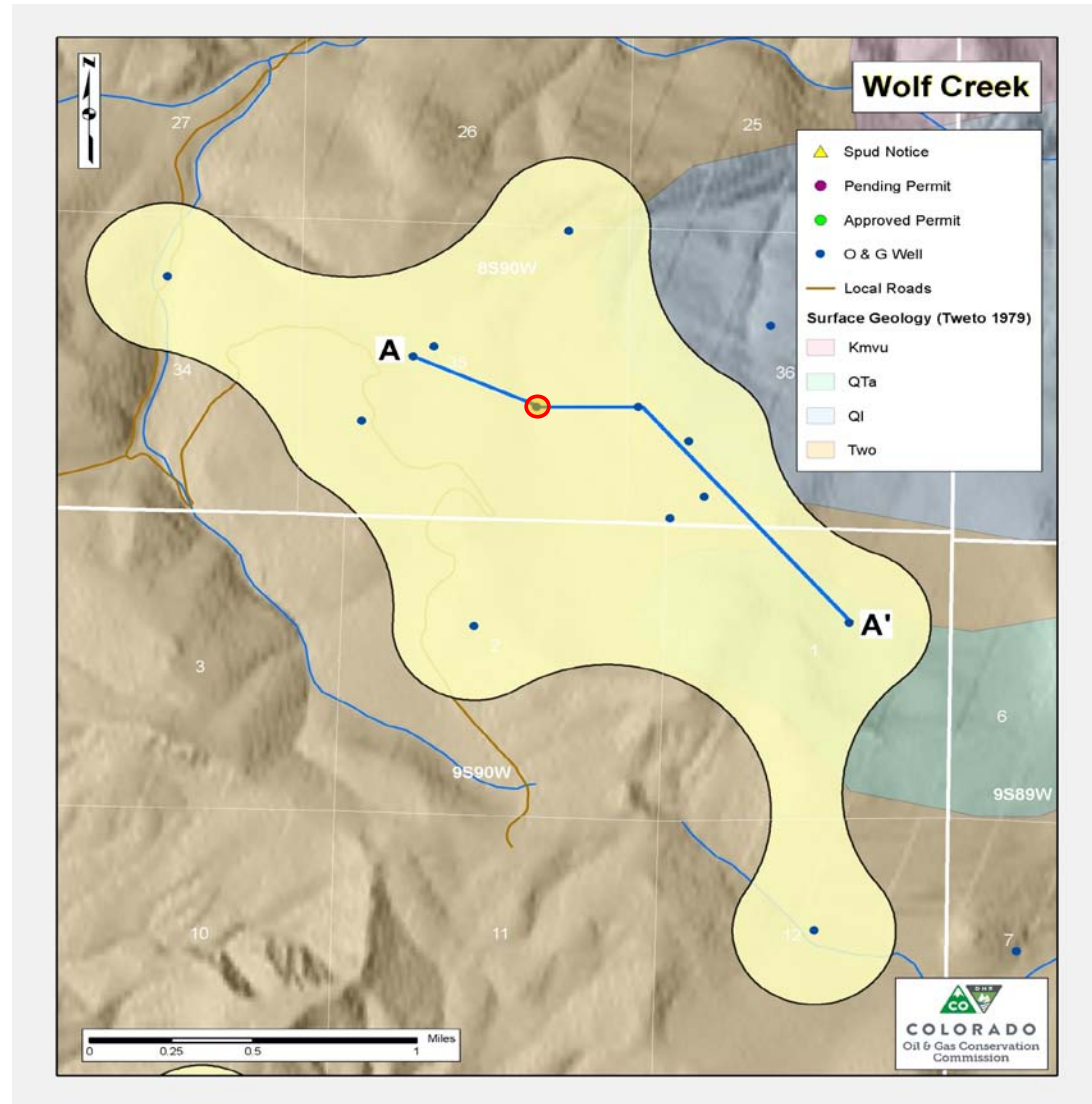
Basin Piceance  
Township(s) 8S to 9S  
Range(s) 90W

### SURFACE GEOLOGY

Surface Geology consists of alluvium and landslide deposits in the eastern portion of the field, underlain by the Wasatch Formation, which outcrops in the western portion of the field.

### GEOLOGIC STRUCTURE

None within the field boundaries on COGCC's 250K GIS Geology layer; a northwest-southeast trending anticline is present several miles to the west, and a northwest-southeast trending syncline is present a few miles to the east.



○ Type Log Well

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**WOLF CREEK #94010**

**STRATIGRAPHY**

				A - Northwest		A' - Southeast		
				API Number =>	097-06005	097-06007	097-06008	097-05067
				Surface Elevation =>	9,805	9,898	10,109	10,283
				Well Type =>	Vertical	Vertical	Vertical	Vertical
Group	Formation	Interval/Member	Isolation Concern	Log Top	Log Top	Log Top	Log Top	
	Alluvium		Water				0	
	Landslide Deposit		Water			0		
	Wasatch	Lower*	Water	0	0			
Mesaverde	Williams Fork	Ohio Creek	Water				380*	
Mesaverde	Williams Fork	U. Mesaverde	Water and Gas		473*	690*	876*	
Mesaverde	Iles	Rollins	Gas		3,638	3,877	3,996*	
Mesaverde	Williams Fork	Cameo	Gas		3,743	3,982	4,116	
	Mancos Tongue		None		4,252	4,486	4,660*	
Mesaverde	Iles	Cozzette	Gas Storage		4,657	4,819	5,002	
Mesaverde	Iles	Corcoran	Possible Gas				5,246	
	Mancos		Possible Gas	4,950				
	Niobrara		Possible Gas	8,435*				
	Frontier		Possible Gas	9,256				
Dakota	Dakota		Possible Gas	9,714				
	Morrison		Possible Gas	9,754				
San Rafael	Entrada		Possible Gas	10,268				
	Chinle		None	10,382				
	Weber		Possible Gas	10,406				

*Annotated Type Log for 097-06007: COGCC Document Number 2056190*

Stippled cells indicate that the respective log top was not apparent on logs or the top may be covered by a shallower casing string above the logged interval.

\* COGCC log picks ("Lower" Wasatch, as shown herein for water isolation, is not recognized in geologic literature)

**WATER RESOURCE ISOLATION**

Alluvium, landslide deposits, Lower Wasatch, Ohio Creek, and Upper Mesaverde  
 Shallow water wells are present within the field boundary (depth of 10' or less - likely groundwater monitoring wells). There are no nearby water supply wells at a similar ground surface elevation.

**PRODUCING ZONE ISOLATION**

Primary Objectives: Cozzette (gas storage field - federal jurisdiction)

**UNDERGROUND INJECTION CONTROL**

None in this field

**COMMISSION ORDER SUMMARY (Significant Engineering and Spacing Issues)**

None for this field

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**HISTORIC WELL CONSTRUCTION**

Surface casing setting depths generally range from 200' to 400', with production casing terminating in the Iles Formation. Production casing cement is normally limited to coverage of the storage interval, and coverage is likely lacking across parts of the Wasatch and Mesaverde Group.

**NEW WELL CONSTRUCTION (effective 04/18/2016)**

Recommendations (gas storage is Federal jurisdiction): Minimum surface casing of 5% TVD required for well control in Mesa County (10% TVD recommended). Full cement coverage of the Mesaverde Group and Ohio Creek is required in the Piceance Basin through 2015. Based on review of induction log response across the Wasatch, Ohio Creek, and Mesaverde (possible water resources), new standards require cementing intermediate or production casing at least 200' into the surface casing for full coverage of these zones.

**PLUGGING OBJECTIVES**

Recommendations (gas storage is federal jurisdiction): Plug(s) above Mancos and other deeper formations (if penetrated) to address potential future horizontal wells; plug above Cozzette storage zone; plugs at base of Ohio Creek and base of Lower Wasatch (squeeze if no annular cement coverage, full coverage not required because of the increased thickness of these zones in this field compared to other fields to the northwest); stray gas isolation squeezes (if no annular cement) or in-casing stabilization plugs (if annular cement present) at 3,000' intervals if plugs are not already planned in those intervals as described above; surface casing shoe plug and surface plug.