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**REPORT CONCERNING THE AFFECTS OF ABANDONED  
UNDERGROUND COAL MINING ON THE BLACKHAWK RANCH**  
Filing No. 3

**Huerfano and Las Animas Counties, Colorado**

Prepared For

Steve Eiche

Land Properties Inc.

By

Carlton E. Gerity, P.E.

November 1996

**PIONEER ENGINEERING**  
**CONSULTING ENGINEERS**

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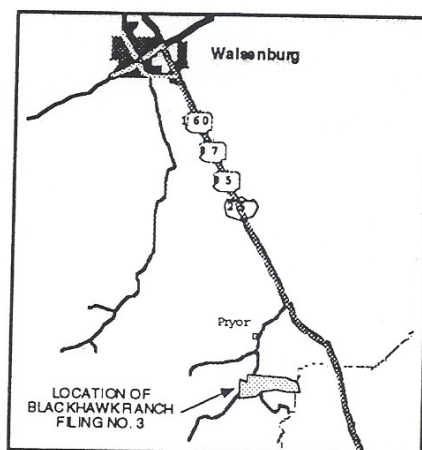
Carlton E. Gerity P.E.

**INTRODUCTION**

This report is a summary of a review of information concerning the affects of underground coal mining at the Blackhawk Ranch, Filing #3, properties located in the Walsenburg, Colorado area. It has been done at the request of Steve Eiche of Land Properties Inc. Specifically the report will address the question of subsidence. As part of this evaluation the Blackhawk Ranch subdivision maps, the historic mine maps and mine data sheets were reviewed, and part of one day was spent at the Ranch site.

**CONCLUSION**

Mine subsidence probably has occurred under the subdivision, even though there is very little visual evidence that it has taken place. The time of the maximum influence or significant disturbance was probably from 48 to 98 years ago based on the recorded dates of operation of the mines. There may be some small residual affects present in the area and these can be compensated by a low cost design of strengthened foundations, non-rigid home construction, an orientation of construction along the directions of the potential minor stresses, or avoiding the undermined areas altogether. The area of most concern would be around the fringes of the historic mining.



**LOCATION MAP**

**PIONEER ENGINEERING**

## **LOCATION**

The Blackhawk Ranch Subdivision is located in Huerfano and Las Animas Counties, Colorado, just east of county road 312 approximately one half mile south of the intersection with county road 310. County road 312 is also referred to as Rouse Road and is located by driving east from the Pryor / Rouse exit, No. 42, on Colorado Interstate 25, approximately 7 miles south of Walsenberg.

## **DESCRIPTION**

Historic mining activities were conducted under Blackhawk Ranch and this report addresses specifically the potential affects on the parcels on Filing #3.

### **Black Diamond Mines**

The Black Diamond (old and new) Mines, are located in Section 32, T29S, R65W. They operated from 1901 to 1922, producing coal from seams or beds that were 3 feet thick. Production was listed at 438,700 tons.

The mines were underground and ranged in depth from 0 feet at the portals or mine entrances along the eastern sections of the mine, to about 200 feet in the northwestern sections of the mine. Map 1 shows the relationship between the mine workings and the subdivision parcels. Parcels 27 and 28, would be the only areas potentially affected by any subsidence from this mine's workings, they are located along the northern portions of this mine. The site visit determined that there is no visual evidence of any mine subsidence in the area.

### **Rouse Mine (New)**

The Rouse Mine (new), also called Rouse #3, is located in Section 31, T29S, R65W, the mine operated from 1905 to 1920 and from 1936 to 1948, producing coal from seams or beds that were 4.7 feet thick. Production is listed as 3,400,000 plus.

The mine was underground and ranged in depth from 0 feet at the portals in the Northeast corner on Section 30, to about 2000 feet along the west and southwest. This mine underlies Parcels 23, and 29 to 41. (See Map 1). There is no visual evidence of any mine subsidence in the area. This mine is very deep under this filing and there are other mines that overlie these workings in shallower coal seams



### **Rugby Mines**

The Rugby Mines are located in Section 31, T29S, R65W. They operated from 1898 to 1924, from 1935 to 1936, and from 1945 to 1954; from coal seams that were from 3.0 to 3.9 feet thick. The mines were underground with a listed production of 1,275,000 tons. They ranged in depth from 0 ft. at the portals in the east to 200 ft to the west. These mines underlay Parcels 38, 40, 41, and 42. There is no evidence of subsidence over these mines.

### **Leader Mines**

The Leader Mines are located in Section 31, T29S, R65W. th Leader #1 and #4 operated from 1920 to 1933. The Leader #2 and #3 operated from 1932 to 1946, from 1952 to 1956, and from 46 to 1960; from coal seams that were 3.0 feet thick. The mines were underground and had a listed production of only 134,000 tons. They ranged in depth from 0 ft. at the portals in the east to 250 ft to the west. These mines underlie Parcel 43. There is no evidence of subsidence over these mines.

### **SUBSIDENCE**

The mining method used at the mines was designed to maximize the amount of extraction and to deliberately induce caving or subsidence, as the coal was mined. Although ongoing subsidence could be present, most of it probably occurred shortly after mining was completed, in the case of the Black Diamond Mines, 74 to 97 years ago, the Rouse Mine from 48 to 76 years ago, the Rugby Mines 42 to 98 years ago, and the Leader Mines from 36 to 76 years ago. The type of subsidence that would be expected would be a gentle rolling of the land surface. This type of subsidence, if it occurs, generally requires no special foundation design, and as a safety precaution presents a relatively easy design. The thinner the coal seam the less effect that it has on the surface.

The cross section that is shown is greatly exaggerated in the vertical sense to demonstrate the physical situation. In a cross section of any of the mines drawn at the same scale as Map 1, the amount of subsidence at the maximum point would be less than the width of the line representing the surface.

Around the edges of the mining area is a zone of tension that presents the most serious problem for foundation design, this is an area where there is a transition from stable ground to subsiding ground. It is very likely that the effects of subsidence occurred years ago, and that there is no ongoing problem, designs to protect against failure in this zone are well understood and relatively inexpensive. The easiest way to avoid any problems would be to locate any structures away from the edges of the mining zones, or by orienting structures along the edges of these zones.





BASE MAP FROM USGS 7.5 MINUTE QUADRANGLE TOPOGRAPHIC MAPS  
 WALSENBURG SOUTH, PLYMOUTH, 1963  
 SANTA FE, COLORADO, CO. 1971  
 SCALE 1:24,000 (BASE MAP SCALE X 2 1:12,000)  
 CONTOUR INTERVAL 10 FT.



TITLE BLACKHAWK RANCH FILING #3  
 MAP 1: POTENTIAL SUBSIDENCE ZONES  
 LOCATION OF HISTORIC UNDERGROUND COAL MINING

REV	DATE	DESCRIPTION

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BY	C.E.G.	DATE	11/7/96	NO.

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