Huerfano County Colorado
Stray Gas Incident Response and Monitoring

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Colorado Oil and Gas Conservation Commission
Where
  South Central Huerfano County
When
  2007 to present
Initial water wells venting methane

1

2

3
Where
Well 1

When
early June 2007

What Happened
Explosion in shed with 250 gallon cistern
Water well monitoring by contractor
13 sections
12 water wells venting methane

Nine venting wells concentrated in 2 sections

Two venting wells near coal outcrop and mines

Well 1 spatially separated from main area
Water wells venting methane
Geologic map with well locations
Baseline data

Methane seep driving survey
Raton Basin Phase 1 Baseline Study

Water well and CBM well water and gas analysis
Raton Basin Phase 1 Baseline Study
Phase 1 (2001/2002) methane seep location with coal mine outlines
Phase 2 (2007) methane seep location with coal mine outlines
Phase 2 (2007) methane seep location with venting water wells
Engineering investigation of P&A oil and gas wells

Conventional O&G wells from 1950 to 1980

CBM wells that were P&Aed

Oil and gas wells converted to water wells
River Ridge Ranch venting wells with P&A oil and gas wells
River Ridge Ranch venting wells with oil and gas wells converted to water wells
Operator voluntarily shut in operations 20 July 2007

COGCC staff met with citizens day after voluntary shut to inform and discuss situation and ongoing activities

COGCC issued cease and desist orders twice in next few months

Commission approved methane investigation, monitoring and mitigation plan in January 2008
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Operator drilled monitoring well and assumed responsibility for surveys of water wells venting status and continued until 2011
Operator developed mitigation plan with new water wells drilled as mitigation wells to remove methane and injection wells to develop water block to minimize methane migration.

Water wells in River Ridge Ranch area ceased venting methane shortly after installation of mitigation wells.
Gas flow was continuous from June 2007 until April 2008. A continuous gas flow measurement device was installed.
Monitoring of water levels and water quality by operator as part of approved plan

Operator plugged all CBM wells and closed mitigation process with approval of Commission in 2011.
Water Levels Rohr 09-04, Gonzales WW and Bruington WW

Vermejo Fm. wells

- Gonzales
- Rohr 09-04
- Bruington
Operator provided water to impacted home owners

Operator installed combustible gas detectors in homes

Operator provided combustible gas detectors and training to local volunteer fire departments and responded to any combustible gas alarm situations
Continued Monitoring by COGCC and others (Raton Basin retrospective case study)

Isotopic Changes in CH₄ at Facility 705167

Sub-Surface Microbial Gas (CO₂ Reduction)
Thermogenic Gas ("Natural Gas" and Coal Gas)
Near-Surface Microbial Gas (Fermentation)

05/01/2013
11/07/2012
05/16/2012
10/05/2011
06/22/2009
09/17/2007
07/06/2007