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11 Pages Including Cover

From: Marty Buys

Subject: West Evans well site

**COMMENTS**

Attached is the report of our investigation at this site in Evans, Colorado. Figure 2 is still being prepared and will be mailed with the report.

Please call once you've read the report.

**B&A** Buys & Associates, Inc.  
Environmental Consultants

REVIEW OF THE LIMITED PHASE II SITE ASSESSMENT, OIL/GAS WELL AND  
PRODUCTION FACILITY, SOUTHEAST CORNER OF 35<sup>TH</sup> AVENUE AND 37<sup>TH</sup> STREET,  
EVANS, COLORADO

Prepared for:

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## Introduction

At the direction of Keith Crouch, Buys and Associates, Inc. (B&A) completed a review of the Limited Phase II Environmental Site Assessment, Oil/Gas Well and Production Facility, Southeast Corner of 35<sup>th</sup> Avenue and 37<sup>th</sup> Street, Evans, Colorado, prepared by Kumar and Associates for Edgemark Development Services, LLC. The limited phase II site assessment completed by Kumar and Associates was performed during July and August, 2003 and consisted of drilling and sampling of 34 soil borings, installation of nine monitoring wells, and collection of groundwater samples. The site assessment concluded that a release of gas condensate from an above-ground storage tank located on the site has impacted soils and shallow groundwater to the south and southwest of the tank.

## Review Methods

The review was conducted by David K. Nicholson, P.G., B&A Senior Geologist, and consisted of the following activities:

- Review of the data and conclusions contained in the Kumar and Associates Limited Phase II site assessment report;
- A meeting with representatives of Kumar and Associates and Edgemark Development Services on September 25, 2003 to discuss the site investigation methods, laboratory analyses, and findings;
- A site visit was conducted on September 26, 2003. During the site visit, water levels and dissolved oxygen was measured in existing monitoring wells at the site, and groundwater samples were collected from four selected monitoring wells and submitted to Evergreen Laboratories for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX).

## Site Description

The site is located in Evans, Colorado in the NW1/4 of the NW1/4 of Section 25, Township 5 North, Range 66 West, about 600 feet south of the southeast corner of 35<sup>th</sup> Avenue and 37<sup>th</sup> Street (Figure 1). This area is currently being developed with housing and commercial buildings.

The subject property gently slopes towards the southwest with elevations ranging from 4770 feet above mean sea level (amsl) on the southern edge of the property to 4785 feet amsl near the northeast corner of the property. Oil and gas facilities on the property consist on an above-ground storage tank used to store gas condensate, an oil/water separator, the wellhead, and approximately 400 feet of underground steel flowline.

Land immediately surrounding the property consists of new development to the north, single-family houses to the south, and open fields to the east and west. One house is located across 37<sup>th</sup> Street to the southwest of the site in the downgradient direction, approximately 200 feet from the condensate tank.



Buyers and Associates, Inc. is in general agreement with the conclusions of the Limited Phase II Site Investigation conducted by Kumar and Associates at the subject property. Specifically, it appears that a release of gas condensate from the above-ground storage tank has impacted soils and shallow groundwater to the south, southwest, and west of the tank. The continued presence of free product in wells MW-1, MW-8, and MW-9 suggests that condensate from the tank has mounded on the surface of the groundwater in this area. This mounding of free product was likely responsible for the contamination observed just upgradient of the tank in well MW-2. The reduction of BTEX concentrations in well MW-2 observed during this review indicates that the spill is moving towards the southwest and/or west from the tank location. The surface area bounded by the tank and the impacted wells (MW-1, MW-2, MW-3, MW-8, and MW-9) is

approximately 150 feet by 60 feet. Analytical results for well MW-4 and the observed groundwater flow direction at the site demonstrate that the portion of the site north of the oil and gas facilities is upgradient from the spill area and not impacted. Well MW-5, though intended by Kumar and Associates to be a downgradient well, appears to be located cross-gradient to the groundwater flow direction and is therefore not useful to evaluate the extent of groundwater contamination at the site. The extent of groundwater contamination has not been established.

#### Recommendations

Guys and Associates, Inc., recommends the following:

- The proper agencies should be notified of the suspected spill and groundwater contamination at the site.
- Three to five additional groundwater monitoring wells should be installed to the southwest and west of the tank location and sampled to assess the extent of free product and groundwater contamination
- Identification of potential receptors, including and users of groundwater immediately downgradient of the tank location, should be conducted.
- Remediation of the impacted soils and removal of free product should be conducted as soon as possible



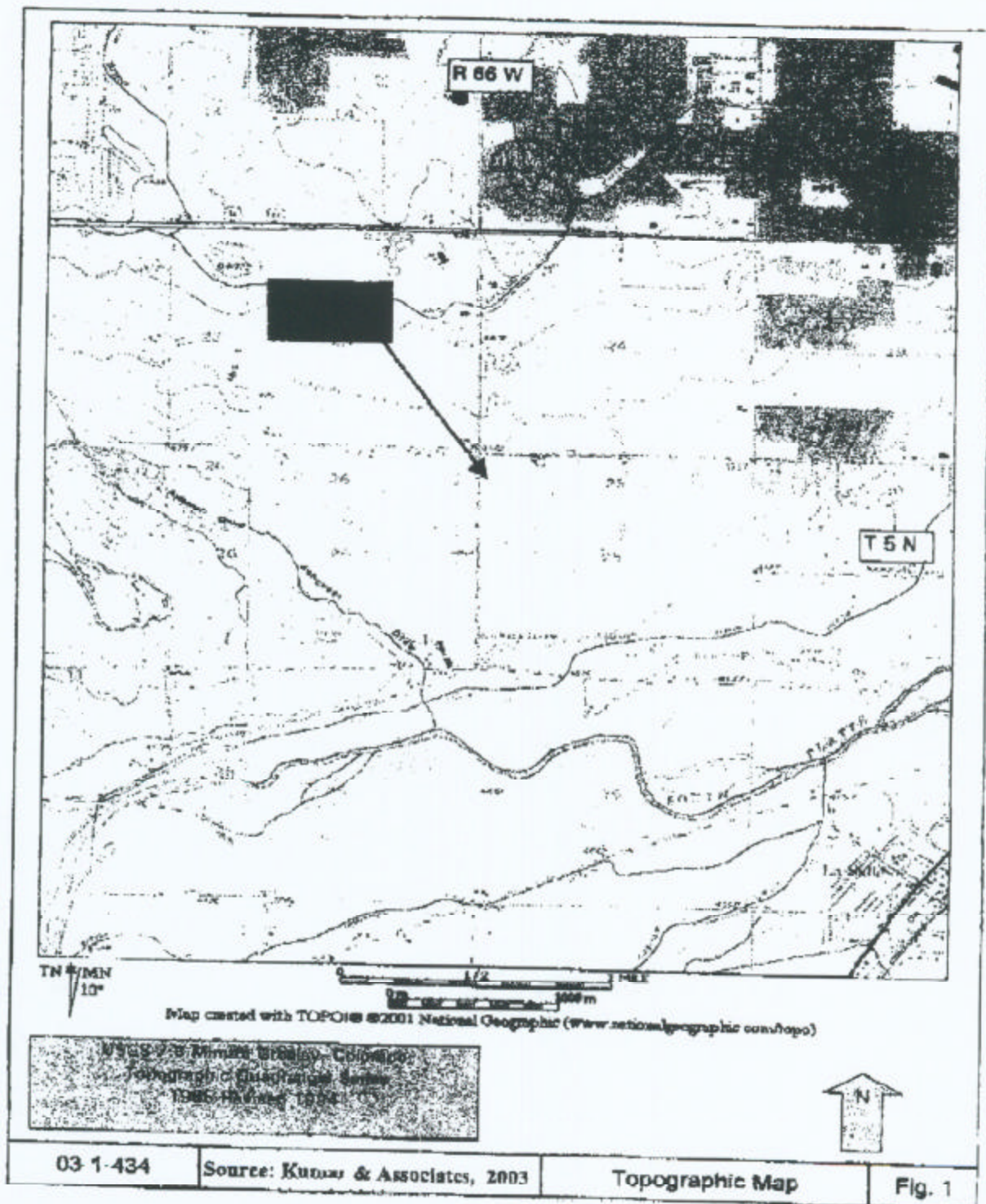


Table 1 Water Levels and Dissolved Oxygen Measured on September 26, 2003

Well ID	Water Level (feet below the top of the casing)	Dissolved Oxygen (mg/L)
MW-1	14.25	NM
MW-2	12.70	1.30
MW-3	11.10	2.34
MW-4	14.22	3.44
MW-5	11.98	1.68
MW-6	11.55	4.10
MW-7	13.21	0.65
MW-8	13.07	NM
MW-9	13.51	NM

NM = Not measured due to the presence of free product



Table 2 Comparison of Analytical Results for Groundwater

Well ID	Parameter	Concentration reported by this review (ug/L)	Concentration reported by Kumar and Associates (ug/L)
MW-2	benzene	72	270
	toluene	13	470
	ethylbenzene	ND	36
	total xylenes	ND	650
MW-3	benzene	2700	1200
	toluene	ND	390
	ethylbenzene	ND	ND
	total xylenes	500	610
MW-4	benzene	ND	ND
	toluene	6.1	ND
	ethylbenzene	ND	ND
	total xylenes	ND	ND
MW-6	benzene	ND	ND
	toluene	ND	ND
	ethylbenzene	ND	ND
	total xylenes	ND	ND

ND = not detected



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APPENDIX A  
Site Photographs



Subject property looking north



Subject property looking southeast



Condensate tank looking southwest



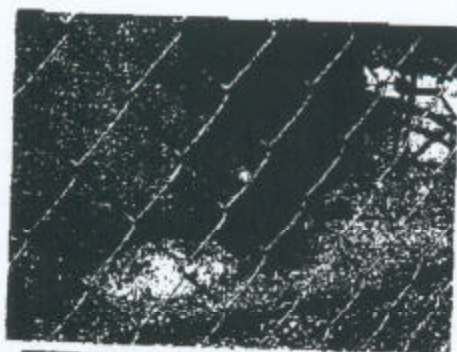
Condensate tank looking northeast



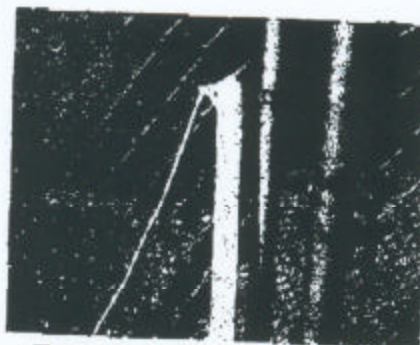
Concrete sump beside storage tank



Oil/water separator looking south



Stained soil beneath tank valve



Free product in well MW-1



Free product in well MW-8



Free product in well MW-9