1R - 426-109

REPORTS

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12-15-08

ARCADIS

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ARCADIS U.S., Inc.
1004 N. Big Spring Street
Suite 300
Midland Texas 79701
Tel 432.687.5400
Fax 432.687.5401
www.arcadis-us.com

Ed Hansen
New Mexico Oil Conservation Division
1220 So. Saint Francis Drive
Santa Fe, New Mexico 87505

Certified Mail Receipt No. 7002 2410 0001 5812 9992

Subject:
Investigation and Characterization Plan Report and Termination Request
OCD Case #R426-109
Blinebry Drinkard (BD) Jct. F-25-2
T21S, R37E, Section 25, Unit F, Eunice, Lea County, New Mexico

Date:
15 December 2008

Contact:
Sharon Hall

Phone:
432 687-5400

Email:
shall@arcadis-us.com

Dear Mr. Hansen,

RICE Operating Company (ROC) has retained ARCADIS U.S, Inc. to address potential environmental concerns at the above-referenced site. ROC is the service provider (agent) for the Blinebry Drinkard (BD) SWD System and has no ownership of any portion of the pipeline, well, or facility. The System is owned by a consortium of oil producers, System Partners, who provide all operating capital on a percentage ownership/usage basis.

On behalf of ROC, ARCADIS respectfully submits this Investigation and Characterization Plan (ICP) Report and Termination Request for the above-referenced site.

SITE HISTORY AND BACKGROUND

The site is located near the town of Eunice, Lea County, New Mexico (Figure 1.) The expected depth to groundwater at this site was approximately 37 feet below ground surface.

The junction box F-25-2 was eliminated and replaced with poly piping that bypasses this junction. Initial delineation began on May 24, 2004 and was completed on June 4, 2004 by trenching with a backhoe to 6 feet below ground surface (bgs). An area 20 feet x 20 feet x 6 feet-deep was excavated and back filled with blended soils to a depth 6 feet bgs. A compacted clay barrier was installed to inhibit downward chloride migration. The excavated area was then back filled with the remaining blended excavation soil. The disturbed surface has been seeded with a blend of native vegetation and monitored for growth. An identification plate has been placed on the surface in the location of the former junction box for future environmental consideration and to identify the presence of the clay barrier.

Soil samples were analyzed in the field for chlorides using field-adapted Method 9253 and screened in the field using a photoionization detector (PID). Confirmation samples were collected from the bottom, side walls (four wall composite sample), and remediated backfill

and sent to Environmental Lab of Texas for Total Petroleum Hydrocarbons (TPH) and Chloride analysis. PID readings were all low and laboratory analysis confirms gasoline range organics (GRO) and diesel range organics (DRO) were not detected.

Based on the results of the soil sampling analytical results, elevated chloride concentrations were identified at the site.

ROC disclosed potential groundwater impact at the site to New Mexico Oil Conservation Division (NMOCD) in an e-mail dated April 15, 2005 A disclosure report was submitted to NMOCD with all of the ROC 2004 Junction Box Reports in March 2006 per the ROC Junction Box Upgrade Workplan. The source of this impact is historical. There is no longer a threat of compounded conditions at this site because the junction has been eliminated and replaced with poly piping that bypasses this junction.

On behalf of ROC ARCADIS submitted an ICP to NMED on July 17, 2007. The plan proposed three tasks:

Task 1- Collect Regional Hydrogeologic Data

A one-half mile water well inventory that includes a review of water well records listed on the New Mexico State Engineer Office and United States Geological Survey (USGS) websites and windmills indicated on applicable USGS topographic maps.

Task 2- Evaluate Concentrations of Constituents of Concern in Soil and Groundwater

Installation of one soil boring at the former junction box location in order to delineate the depth of impacts to soil. Additional soil borings were proposed to evaluate soil impacts. One soil boring was proposed in each direction from the former junction box location (north, south east and west of the excavated area) in order to delineate the lateral extent of impacts to soil. It was proposed that if chloride and/or hydrocarbon concentrations do not decline sufficiently with depth or exceed 250 milligrams per kilogram (mg/kg) or PID readings of 100 within 10 feet of the suspected groundwater depth one soil boring would be converted to a monitor well. The monitoring well would be placed near-source to observe soil impacts.

Task 3 Evaluate Potential Flux from the Vadose Zone to Ground Water

As proposed in the ICP the information gathered from tasks 1 and 2 would be evaluated and utilized to design a groundwater remedy if needed. The groundwater remedy that offers the greatest environmental benefit while causing the least environmental impairment would be selected. If the evaluation demonstrates that residual constituents pose no threat to ground water quality, only a surface restoration plan protective of groundwater would be proposed.

Such recommendations and findings would be presented to NMOCD in a subsequent Corrective Action Plan (CAP).
The proposed ICP was approved by NMOCD on August 8, 2007.

Based on the results of the water well inventory and discussions with the landowner it came to our attention that groundwater may not be present at the site. Following a call between Edward Hansen (NMOCD) and Sharon Hall (ARCADIS) ARCADIS submitted a request via email on August 7, 2008 to install one soil boring at the site to a depth of 75 feet bgs, ten feet below the average water depth in Section 23. Attached to the request was a State Engineer's Report for Township 21S Range 37E, Sections 23, 24, 25, 26, 35 and 36. Of 29 wells drilled in these sections only 2 wells reported groundwater. Both wells were located in Section 23 and the average depth to groundwater is 65 feet bgs.

NMOCD conditionally approved the request on September 25, 2008 providing that the boring be drilled to a depth of 85 feet bgs and the boring remain open for at least 48 hours following completion.

BORING RESULTS

A boring was installed at the site five feet east of the former junction box location on October 7, 2008. The boring was drilled to a depth of 85 feet bgs and no moist soils were encountered. A boring log with field chloride concentrations is attached. The boring remained opened until October 9, 2009. It was gauged with an interface probe on October 9, 2008 and no groundwater was encountered in the boring.

RECOMMENDATIONS

Based on the fact that ROC has documented groundwater is not present at the site and has installed a clay liner at the junction box location ARCADIS recommends termination of this site.

Very Truly Yours,

ARCADIS U.S., Inc.

Sharon E. Hall

Sharon E. Hall Associate Vice President

Copies:
Marvin Burrows- Rice Operating Company
Hack Conder- Rice Operating Company

Attachments: Boring Log, Photographs, Correspondence

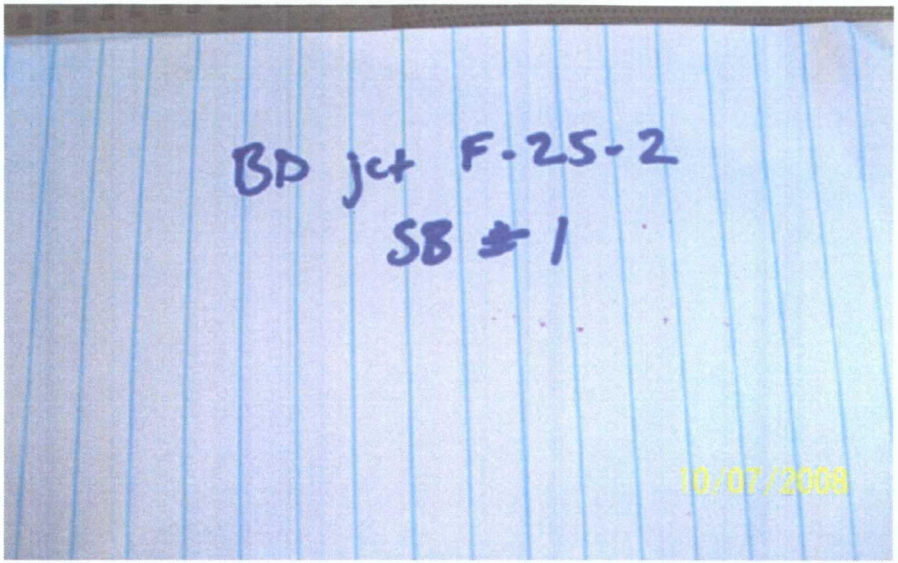
Logger:	Lara Weinheimer	**Client:** RICE Operating Company	**Well ID:**
Driller:	Harrison & Cooper Drilling		
Drilling Method:	Air rotary	**Project Name:** BD jct. F-25-2	
Start Date:	10-7-08		
End Date:	10-7-08	**Location:** BD SWD System unit 'F' Sec.25 T21S, R37E Lea County, NM	SB - 1
Comments: Located 5 ft east of the former jct. box site TD = 85 ft GW = none			

Depth (feet)	chloride field tests	PID	Description
15	3726		15 - 25 ft VERY FINE TO FINE SAND some rock, orangey-brown, dry
20	4528		
25	5211		
			25 - 35 ft VERY FINE TO FINE SAND some rock, caliche, clay, purplish-brown dry
30	5090		
35	3049		
			35 - 40 ft VERY FINE TO FINE SAND caliche, orangey-brown, dry
40	3260		
			40 - 65 ft VERY FINE TO FINE SAND reddish-orange, dry
45	1196		
50	320		
55	227		
60	206		
65	1016		
			65 - 70 ft VERY FINE TO FINE SAND some clay, purplish-brown, dry
70	303		
			70 - 85 ft SANDY CLAY purplish-brown, dry
75	260		
80	234		
85	238		

Lithology

Soil Bore Construction

bentonite seal



Drilling SB #1

Plugging SB #1 with bentonite
2 days later

Completed SB #1

Hall, Sharon

From: Hansen, Edward J., EMNRD [edwardj.hansen@state.nm.us]
Sent: Thursday, September 25, 2008 10:42 AM
To: Hack Conder
Cc: Price, Wayne, EMNRD; Hall, Sharon
Subject: RE: ROC BD F-25-1 and 2, NMOCD Case #s 1R426-108 and 1R426-109

Dear Mr. Conder:

The New Mexico Oil Conservation Division (NMOCD) has received the proposed amendments to the respective ICPs for the above reference sites. The NMOCD hereby conditionally approves the proposed amendments:

1) Rice Operating Company must advance the respective borings to a depth of 85 feet bgs.
2) Rice Operating Company must monitor the respective open borings for water at least 48 hours after the completion of the respective borings.

Please be advised that NMOCD approval of these amendments does not relieve the owner/operator of responsibility should operations pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD approval does not relieve the owner/operator of responsibility for compliance with any OCD, federal, state, or local laws and/or regulations.

If you have any questions regarding this matter, please contact me at 505-476-3489.

Edward J. Hansen
Hydrologist
Environmental Bureau

From: Hall, Sharon [mailto:Sharon.Hall@arcadis-us.com]
Sent: Wednesday, September 24, 2008 2:37 PM
To: Hansen, Edward J., EMNRD
Subject: FW: ROC BD F-25-1 and 2, NMOCD Case #s 1R426-108 and 1R426-109

Ed,
Do we have your approval to drill one soil boring at each of these locations to a depth of 75 feet to document that there is no groundwater rather than to drill 5 soil boring and possibly convert one to a monitor well?
Regards,
Sharon

From: Hall, Sharon
Sent: Thursday, August 07, 2008 8:05 AM
To: Hansen, Edward J., EMNRD
Cc: Hack Conder
Subject: ROC BD F-25-1 and 2, NMOCD Case #s 1R426-108 and 1R426-109

Ed,
We discussed the procedure to document that there is no groundwater at a site. I have attached the State Engineer's Report for Township 21S, Range 37E, Sections 23,24,25,26,35, and 36. The subject sites are in section 25. You will see from the reports that 29 wells were drilled in these sections. Of the 29 wells only two report groundwater. Both are in Section 23 and the average depth to groundwater is 65 feet. Additionally, the landowner at the subject sites told ROC that he has drilled for groundwater and has been unsuccessful.

We have approved Investigation Characterization Plans (ICPS) at these sites. They were approved on 7/18/2007 and the approved scope was to drill 5 soil borings, possibly converting the source boring to a monitor well. We would like to request an amendment to the ICPs in light of the fact that groundwater likely does not occur at these sites. I propose that we drill one soil boring at each site to a depth of 75 feet, ten feet below the average water depth in Section 23.

Your approval of this request will be appreciated. Please let me know if I need to submit a letter of request or a revised ICP. Let me know if you have any questions or need additional information.
Regards,
Sharon

Sharon E. Hall PG, REM
Associate Vice President
ARCADIS G&M Inc
1004 N. Big Spring Street, Suite 300
Midland, Texas 79701
ph: 432 687-5400
fax:432 687-5401

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New Mexico Office of the State Engineer
POD Reports and Downloads

Township: 21S Range: 37E Sections: 23,24,25,26,35,36

NAD27 X: Y: Zone: Search Radius:

County: Basin: Number: Suffix:

Owner Name: (First) (Last) ○Non-Domestic ○Domestic
◉All

POD / Surface Data Report | Avg Depth to Water Report | Water Column Report

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AVERAGE DEPTH OF WATER REPORT 07/24/2008

								(Depth Water in Feet)		
Bsn	Tws	Rng	Sec	Zone	X	Y	Wells	Min	Max	Avg
CP	21S	37E	23				2	65	65	65

Record Count: 2

CP 00229		21S	37E	35	4	3	4	85
CP 00914 EXPL		21S	37E	36	1	3	4	72

Record Count: 18

New Mexico Office of the State Engineer

POD Reports and Downloads

Township: 21S | Range: 37E | Sections: 23,24,25,26,35,36

NAD27 X: | Y: | Zone: | Search Radius:

County: | Basin: | Number: | Suffix:

Owner Name: (First) | (Last) | ○Non-Domestic ○Domestic ◉All

POD / Surface Data Report | Avg Depth to Water Report | Water Column Report

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POD / SURFACE DATA REPORT 08/06/2008

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are biggest to smallest X Y are in Feet UTM are i

DB File Nbr	Use	(acre ft per annum) Diversion	Owner	POD Number	Source	Tws	Rng	Sec	q	q	q	Zone	X	Y	UTM_Zone
CP 00014	IND	75	VERSADO GAS PROCESSORS, LLC	CP 00014		21S	37E	23	2	3	1				13
CP 00111	DOM	0	W. J. MCCASLAND	CP 00111 DCL		21S	37E	36	3						13
CP 00133	DOM	0	HARIEN STEPHENS	CP 00133 DCL		21S	37E	35	4	2	2				13
CP 00134	STK	0	MARION STEPHENS	CP 00134 DCL		21S	37E	24	1	1	1				13
CP 00138	STK	0	MARION AND WILLIAM O STEPHENS	CP 00138 DCL		21S	37E	35	2	2	3				13
CP 00214	DOM	0	J. M. AND M. W. OWEN	CP 00214 DCL		21S	37E	35	4	1	2				13
CP 00220	DOM	0	M. W. OWENS	CP 00220 DCL		21S	37E	25	3	1	1				13
CP 00221	DOM	0	J. M. OWEN	CP 00221 DCL		21S	37E	35							13
CP 00222	IND	15	VERSADO GAS PROCESSORS, LLC	CP 00222		21S	37E	35	4	4	2				13
CP 00223	IND	69	VERSADO GAS PROCESSORS LLC	CP 00223	Shallow	21S	37E	35	4	2	3				13
CP 00224	IND	31	VERSADO GAS PROCESSORS, LLC	CP 00224		21S	37E	23	3	3	4				13
CP 00225	IND	32.38	VERSADO GAS PROCESSORS, LLC	CP 00225	Shallow	21S	37E	35	4	2	2				13
CP 00226	IND	48.39	VERSADO GAS PROCESSORS, LLC	CP 00226	Shallow	21S	37E	26	4	4	1				13
CP 00227	IND	32.26	VERSADO GAS PROCESSORS, LLC	CP 00227	Shallow	21S	37E	26	4	3	2				13
CP 00228	IND	24.2	VERSADO GAS PROCESSORS, LLC	CP 00228	Shallow	21S	37E	26	4	3	4				13
CP 00229	IND	19.36	VERSADO GAS PROCESSORS, LLC	CP 00229		21S	37E	35	4	3	4				13
CP 00230	IND	48.39	VERSADO GAS PROCESSORS, LLC	CP 00230	Shallow	21S	37E	26	3	2	3				13

CP 00235	IND	61	VERSADO GAS PROCESSORS LLC	CP 00235		21S	37E	23	1 2 2		13
CP 00236	IND	40	VERSADO GAS PROCESSORS LLC	CP 00236		21S	37E	23	2 1 3		13
CP 00238	IND	40	VERSADO GAS PROCESSORS LLC	CP 00238		21S	37E	23	2 3 3		13
CP 00239	IND	25	VERSADO GAS PROCESSORS LLC	CP 00239	Shallow	21S	37E	23	2 1 1		13
CP 00240	IND	34	VERSADO GAS PROCESSORS LLC	CP 00240	Shallow	21S	37E	23	1 2 4		13
CP 00241	IND	11	VERSADO GAS PROCESSORS LLC	CP 00241	Shallow	21S	37E	23	1 2 4		13
CP 00356	DOM	0	WILL J. MCCASLAND	CP 00356 EXP		21S	37E	36	3 3		13
CP 00405	STK	0	WILLIAM O. ET AL STEPHENS	CP 00405 EXP		21S	37E	35	2 2 1		13
CP 00562	STK	3	JIMMIE D. WEIR	CP 00562	Shallow	21S	37E	23	2 2 1		13
CP 00686	DOM	0	ALBERT HERNANDZ	CP 00868 EXP		21S	37E	23	2 4 3		13
CP 00700	MUL	3	WAYNE R. WALKER	CP 00700	Shallow	21S	37E	23	2		13
CP 00914	EXP	0	ROBERT WALLACH	CP 00914 EXPL	Shallow	21S	37E	36	1 3 4		13

Record Count: 29

New Mexico Office of the State Engineer
POD Reports and Downloads

Township: 21S Range: 37E Sections: 23,24,25,26,35,36

NAD27 X: Y: Zone: Search Radius:

County: Basin: Number: Suffix:

Owner Name: (First) (Last) Non-Domestic Domestic All

POD / Surface Data Report | Avg Depth to Water Report | Water Column Report

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WATER COLUMN REPORT 08/06/2008

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are biggest to smallest)

POD Number	Tws	Rng	Sec	q	q	q	Zone	X	Y	Depth Well	Depth Water	Water Column (in feet)
CP 00235	21S	37E	23	1	2	2				81		
CP 00241	21S	37E	23	1	2	4				76		
CP 00240	21S	37E	23	1	2	4				72		
CP 00700	21S	37E	23	2						75	65	10
CP 00239	21S	37E	23	2	1	1				89		
CP 00236	21S	37E	23	2	1	3				83		
CP 00562	21S	37E	23	2	2	1				136	65	71
CP 00014	21S	37E	23	2	3	1				84		
CP 00238	21S	37E	23	2	3	3				81		
CP 00224	21S	37E	23	3	3	4				96		
CP 00230	21S	37E	26	3	2	3				85		
CP 00227	21S	37E	26	4	3	2				85		
CP 00228	21S	37E	26	4	3	4				90		
CP 00226	21S	37E	26	4	4	1				80		
CP 00225	21S	37E	35	4	2	2				85		
CP 00223	21S	37E	35	4	2	3				110		