1R-425-85

WORKPLANS

Date:

5-2-11

L. Peter Galusky, Jr. Ph.D., P.G.
Texerra
75 Wuthering Hts Drive Colorado Springs, CO 80921
Tel: 917-339-6791 E-mail: lpg@texerra.com

May 2nd, 2011

Mr. Edward Hansen
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

RE: **INVESTIGATION & CHARACTERIZATION PLAN (ICP)**
Rice Operating Company – Vacuum SWD System
Vacuum N-28 Vent: UL/N, Sec. 28, T17S, R35E
NMOCD Case Number: 1R425-85

Sent via Certified U.S. Mail w/ Return Receipt No. 7011 0110 0001 5863 8149

Mr. Hansen:

RICE Operating Company (ROC) has retained Texerra to address potential environmental concerns at the above-referenced site in the Abandoned Vacuum Salt Water Disposal (SWD) system. ROC is the service provider (agent) for the Vacuum 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 Parties, who provide all operating capital on a percentage/usage basis. Environmental projects of this nature require System Party AFE approval prior to work commencing at the site. In general, project funding is not forthcoming until NMOCD approves the work plan. Therefore, your timely review of this submission is greatly appreciated.

For all such environmental projects, ROC will choose the path forward that:

- Protects public health,
- Provides the greatest net environmental benefit,
- Complies with NMOCD Rules, and
- Is supported by good science.

Each site shall generally have three submissions:

1. This Investigation and Characterization Plan (ICP) is proposed for gathering data and site characterization and assessment.
2. Upon evaluating the data and results from the ICP, a recommended remedy will be submitted in a Corrective Action Plan (CAP) if warranted.
3. Finally, after implementing the remedy, a Termination Request with final documentation will be submitted.

Background and Previous Work

This site is located approximately 2.5 miles east of Buckeye, New Mexico in UL/N, Sec. 28, T17S, R35E as shown on the Site Location Map (Figure 1). NM OSE records indicate that groundwater will likely be encountered at a depth of approximately 65 +/- feet.

In 2009 ROC initiated work on the former Vacuum N-28 Vent as part of the system abandonment. An initial evaluation of residual soil chlorides and petroleum hydrocarbons was made using an air-rotary drill, analyzing samples taken at the former junction box location the ground surface to 12 ft bgs. (Field and laboratory results are summarized in the attached Junction Box Disclosure Report). Laboratory analysis for diesel range organics (DRO) tested at 80.3 mg/kg and gasoline range organics (GRO) were non-detect (< 10 mg/kg). In contrast, residual soil chlorides tested approximately 8,700 mg/kg at 9 ft bgs, dropping to approximately 2,100 mg/kg at 12 ft bgs. The entire borehole was plugged with bentonite to the ground surface. NMOCD was notified of potential groundwater impact on November 16th, 2009.

ROC proposes additional investigative and characterization work at the site to determine if there is potential for groundwater degradation from residual chlorides at the site.

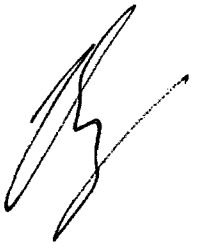
Proposed Work Elements

1. Summarize information and data collected by ROC to date.
2. Summarize additional, publicly available regional and local hydrological information.
3. Conduct vertical and lateral delineation of residual soil chlorides from samples taken using a drill rig, hand auger and/or backhoe.
    a. Vertical sampling will be conducted until the following criteria are met in the field.
        i. Three samples in which the chloride concentration decreases and the third sample has a chloride concentration of ≤ 250 ppm; and,
        ii. Three samples in which PID readings decrease and the third sample has a PID reading of ≤ 100 ppm; or,
        iii. The sampling reaches the capillary fringe.
    b. Lateral sampling will be conducted until the following criteria are met in the field.
        i. A decrease is observed in chloride concentrations between lateral bores at similar depths; and,
        ii. A chloride concentration of ≤ 250 ppm is observed in a lateral surface sample; or,
        iii. Safety concerns impede further lateral delineation.
4. If warranted, install a monitor well to provide a direct measurement of potential groundwater impact. (All monitoring wells will be constructed per EPA, NMOCD, and industry standards).
5. Evaluate the risk of groundwater impact in light of the information obtained.

If the evaluation demonstrates that residual constituents pose no threat to ground water quality, then only a surface restoration plan will be proposed to OCD. If this work indicates that there is a present or future risk of impacting groundwater quality from past operations at this location, then a corrective action plan (CAP) will be developed and proposed to OCD.

Thank you for your time and consideration on this project. Please call Hack Conder at (575) 393-9174 or myself if you have any questions or wish to discuss this project.

Sincerely,



L. Peter Galusky, Jr. Ph.D., P.G.

Copy: Rice Operating Company
Attachments: Junction Box Disclosure Report

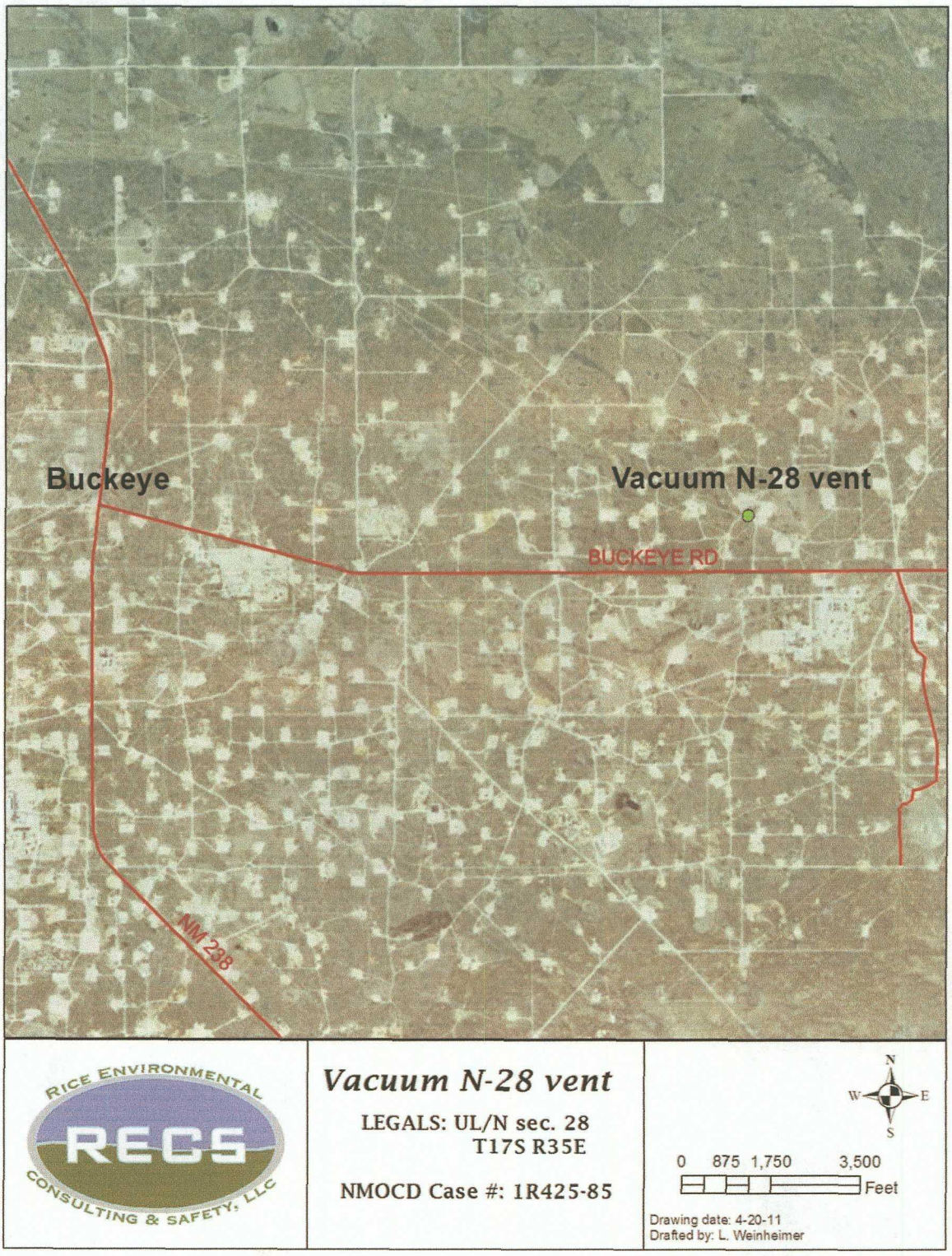


Figure 1 – Site location map.

Junction Box Disclosure Report

RICE Environmental Consulting and Safety (RECS)
P.O. Box 5630 Hobbs, NM 88241
Phone 575.393.4411 Fax 575.393.0293

RICE OPERATING COMPANY
JUNCTION BOX DISCLOSURE* REPORT

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
Vacuum	N-28 vent	N	28	17S	35E	Lea	eliminated		

LAND TYPE: BLM ___ STATE X FEE LANDOWNER _____ OTHER _____

Depth to Groundwater 65 feet NMOCD SITE ASSESSMENT RANKING SCORE: 10

Date Started 6/18/2009 Date Completed 6/18/2009 OCD Witness no

Soil Excavated n/a cubic yards Excavation Length n/a Width n/a Depth n/a feet

Soil Disposed 0 cubic yards Offsite Facility n/a Location n/a

FINAL ANALYTICAL RESULTS: **Sample Date** 6/18/2009 **Sample Depth** 12 ft

TPH and Chloride laboratory test results completed by using an approved lab and testing procedures pursuant to NMOCD guidelines.

Sample Location	PID (field) ppm	GRO mg/kg	DRO mg/kg	Chloride mg/kg
SB #1 12' GRAB	15.0	<10.0	80.3	2,560

CHLORIDE FIELD TESTS

LOCATION	DEPTH	mg/kg
background	6"	149
vertical delineation at the junction (source)	3'	856
	4'	1,294
	5'	2,875
	6'	4,013
	7'	6,920
	8'	7,662
	9'	8,714
	10'	2,905
	11'	2,098
	12'	2,117

General Description of Remedial Action: This junction was addressed during the Vacuum SWD System abandonment. Clean, imported soil was used to backfill the former junction box site to allow a drilling rig access to the site. An investigation was conducted at the former junction box site using a air-rotary drilling rig to collect soil samples at regular intervals. Chloride field tests were performed on each sample which yielded elevated concentrations. Organic vapors were measured using a PID which yielded low concentrations. The deepest sample, 12 ft BGS, was sent to a commercial laboratory for analysis of chloride and TPH. Laboratory analysis confirmed elevated concentrations of chloride and low concentrations of TPH. The entire bore hole was plugged with bentonite to the ground surface. NMOCD was notified of potential groundwater impact on 11/16/2009.

ADDITIONAL EVALUATION IS *MEDIUM* PRIORITY

enclosures: photos, lab results, PID (field) screenings, chloride curve

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

SITE SUPERVISOR Jordan Woodfin SIGNATURE Jordan Woodfin COMPANY RICE OPERATING COMPANY

REPORT ASSEMBLED BY Katie Jones INITIAL KJ

PROJECT LEADER Larry Bruce Baker Jr. SIGNATURE Larry Bruce Baker Jr. DATE 11-17-09

*This site is a "DISCLOSURE." It will be placed on a prioritized list of similar sites for further consideration.

Vacuum N-28 vent

Unit N, Section 28, T17S, R35E

hauling in fresh soil 5/27/2009

backfilling the former junction box site 5/29/2009

drilling SB #1 at the former junction box site 6/18/2009

plugging SB #1 with bentonite 6/18/2009

CARDINAL LABORATORIES

PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: JORDAN WOODFIN
122 W. TAYLOR
HOBBS, NM 88240

COPY

Receiving Date: 06/19/09
Reporting Date: 06/22/09
Project Number: NOT GIVEN
Project Name: VACUUM JCT N-28
Project Location: VACUUM JCT N-28

Sampling Date: 06/18/09
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: AB/HM

LAB NUMBER	SAMPLE ID	GRO (C_6-C_{10}) (mg/kg)	DRO (>C_{10}-C_{28}) (mg/kg)	Cl* (mg/kg)
ANALYSIS DATE		06/20/09	06/20/09	06/19/09
H17668-1	SB #1 @ 12FT	<10.0	80.3	2,560
Quality Control		514	551	500
True Value QC		500	500	500
% Recovery		103	110	100
Relative Percent Difference		4.0	5.7	<0.1

METHODS: TPH GRO & DRO: EPA SW-846 8015 M; Cl: Std. Methods 4500-Cl B
*Analysis performed on a 1:4 w:v aqueous extract. Reported on wet weight.

Chemist

06/23/09
Date

H17668 TCL RICE

CARDINAL LABORATORIES

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603
(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325)673-7020

Company Name:	Rice Operating	BILL TO	
Project Manager:		P.O. #:	
Address:	122 W TAYLOR	Company:	
City:	HOBBS State: NM Zip: 88240	Attn:	
Phone #:	393-9174 Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:	Vacuum Jct N-28	State: Zip:	
Project Location:	Vacuum Jct N-28	Phone #:	
Sampler Name:	JORDAN WOODFIN	Fax #:	

ANALYSIS REQUEST

COPY

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	Cl-	TPH 8015m
H17668-1	SB #1 @ 12ft	G	1			X					X		6/18/09	2:47p	X	X

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By:	Date: 6/19/09	Received By:	Phone Result: ☐ Yes ☐ No Add'l Phone #:
Bruce Baker	Time: 1:19pm		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS: Email Results to BBAKER@RICESWD.com CC JPURVIS@RICESWD.COM
	Time:		

Delivered By: (Circle One) Sampler - UPS - Bus - Other

Sample Condition: Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No

CHECKED BY: (Initials) MC BB

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

RICE OPERATING COMPANY

122 West Tayor Hobbs, NM 88240
PHONE: (575) 393-9174 FAX: (575) 397-1471
PID METER CALIBRATION & FIELD REPORT FORM

COPY

Check Model Number:

✓	Model: PGM 7300	Serial No: 590-000183		Model: PGM 7600	Serial No: 110-023920
	Model: PGM 7300	Serial No: 590-000508		Model: PGM 7600	Serial No: 110-013744
	Model: PGM 7300	Serial No: 590-000504		Model: PGM 7600	Serial No: 110-013676

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO: 360C/	EXPIRATION DATE: 10-9-10
FILL DATE: 4-9-09	METER READING ACCURACY: 100'

ACCURACY : +/- 2%

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
Vacuum	Vent N-28	N	28	17S	35E

SAMPLE ID	PID	SAMPLE ID	PID
3'	176	Background	
4'	178	6"	0.4
5'	215		
6'	162		
7'	58		
8'	5.5		
9'	10.9		
10'	11.2		
11'	12.6		
12'	15		

I verify that I have calibrated the above instrument in accordance to the manufacture operation manual.

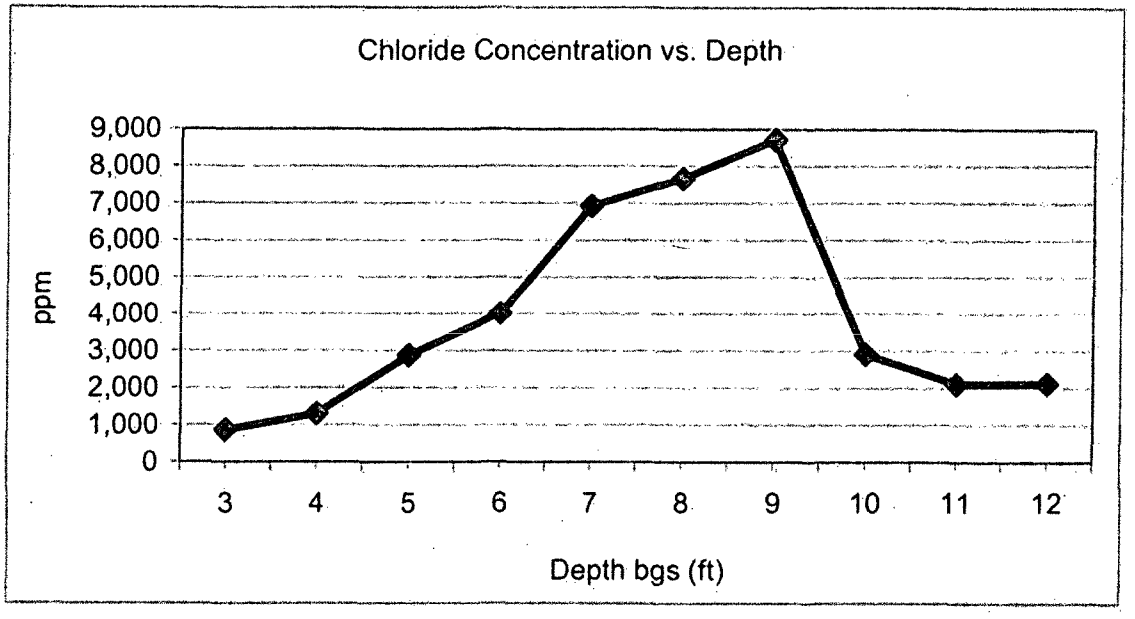
SIGNATURE: Jordan Woolf DATE: 6-18-09

Vacuum N-28 vent

Unit 'N', Sec. 28, T17S, R35E

Soil Bore samples at the junction (source)

Depth bgs (ft)	[Cl] ppm
3	856
4	1,294
5	2,875
6	4,013
7	6,920
8	7,662
9	8,714
10	2,905
11	2,098
12	2,117



Groundwater = 65 ft