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**REPORTS**

**DATE:**

**2011**

**RICE** *Operating Company* RECEIVED OGD

122 West Taylor • Hobbs, New Mexico 88240

Phone: (575) 393-9174 • Fax: (575) 397-1471 MAY -1 P 1: 50

May 1, 2012

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: JUNCTION BOX UPGRADE REPORT for 2011  
EME SWD SYSTEM  
Lea County, New Mexico

Mr. Hansen:

Rice Operating Company (ROC) takes this opportunity to submit the Junction Box Upgrade results for the year 2011. Enclosed is a list of the completed junction boxes and their respective closure/disclosure dates. These boxes are located in the Eunice-Monument-Eumont (EME) Salt Water Disposal (SWD) System located in the vicinity of Eunice, New Mexico.

ROC completed 29 junction boxes in 2011. Junction box upgrades in 2012 will be conducted in conjunction with scheduled pipeline replacements.

Enclosed are the 2008 results (17 sites evaluated with 22 sampling locations) from the PID/BTEX study described in the NMOCD-approved Revised Junction Box Upgrade Work Plan (July 16, 2003). A third-party analysis, conducted by Peter Galusky, Jr. Ph.D. of Texerra, concluded from the data collected thus far that field-composited values tend to produce slightly higher BTEX numbers above the point at which BTEX concentrations become significant. This is likely due to the fact that BTEX is volatile and quickly biodegradable. This analysis was submitted to NMOCD on March 12, 2009. An appropriate number of sample sites could not be obtained to conduct a 2011 BTEX comparison analysis. Peter Galusky, Jr. Ph.D. of Texerra also compared ROC's 2011 chloride field tests to chloride laboratory analyses; the analysis is also enclosed. The study of this data continues to validate the accuracy of the chloride field tests employed by ROC.

ROC is the service provider (agent) for the EME 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 ownership/usage basis.

Replacement/closure projects of this magnitude require System Party AFE approval and work begins as funds are received.

Thank you for your consideration of this Junction Box Upgrade Report for 2011.

RICE OPERATING COMPANY

A handwritten signature in black ink, appearing to read "H. Conder", written in a cursive style.

Hack Conder  
Environmental Manager

enclosures as stated

cc: SC, file, Mr. Geoffrey Leking  
NMOCD, District I Office  
1625 N. French Drive  
Hobbs, NM 88240

**Rice Operating Company  
EME SWD System Junction Box Upgrade Project  
2011 Completed Boxes**

		Legal Description				Completion Date	OCD Assessment Score	Report Status	Case Number
	Jct Box Name	Unit	Sec	T	R				
1	A-24 EOL	A	24	19S	36E	4/7/2011	20	Disclosure	
2	C-5 EOL	C	5	21S	36E	12/28/2011	0	Disclosure	
3	I-35 EOL	I	35	19S	36E	9/29/2011	40	Disclosure	
4	I-7 EOL	I	7	19S	37E	5/12/2011	40	Disclosure	
5	Jct. C-13	C	13	20S	36E	8/31/2011	20	Disclosure	
6	Jct. G-14	G	14	20S	36E	8/1/2011	40	Disclosure	
7	P-18 EOL	P	18	19S	37E	2/14/2011	20	Disclosure	
8	A-4 EOL	A	4	20S	36E	7/8/2011	20	Closure	
9	C-10 EOL	C	10	20S	36E	7/8/2011	20	Closure	
10	E-23 EOL	E	23	19S	36E	7/28/2011	10	Closure	
11	E-30 EOL	E	30	19S	37E	1/24/2011	20	Closure	
12	F-23 EOL	F	23	19S	36E	7/28/2011	10	Closure	
13	F-36 EOL	F	36	19S	36E	1/5/2012	20	Closure	
14	G-9 EOL	G	9	20S	36E	8/4/2011	20	Closure	
15	H-36 EOL	H	36	19S	36E	8/9/2011	20	Closure	
16	I-19 EOL	I	19	19S	37E	5/12/2011	40	Closure	
17	Jct. F-23	F	23	19S	36E	6/29/2011	30	Closure	
18	Jct. G-4	G	4	20S	36E	5/26/2011	20	Closure	
19	Jct. H-27	H	27	19S	36E	1/17/2012	20	Closure	
20	Jct. J-25-1	J	25	19S	36E	2/8/2011	20	Closure	
21	Jct. J-25-2	J	25	19S	36E	5/13/2011	20	Closure	
22	Jct. P-22	P	22	19S	36E	8/4/2011	20	Closure	
23	K-10-1 Jct.	K	10	20S	36E	5/27/2011	40	Closure	
24	K-19 EOL	K	19	19S	37E	2/11/2011	20	Closure	
25	K-9 EOL	K	9	21S	36E	7/1/2011	0	Closure	
26	L-21 EOL	L	21	19S	37E	1/20/2011	20	Closure	
27	L-5 EOL	L	5	21S	36E	11/3/2011	0	Closure	
28	N-35 EOL	N	35	19S	36E	12/20/2011	10	Closure	
29	P-4 EOL	P	4	20S	36E	7/8/2011	20	Closure	

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

**Texerra**

**505 N Big Spring, Suite 404 Midland, Texas 79701  
Tel: 432-634-9257 E-mail: lpg@texerra.com**

March 10<sup>th</sup>, 2009

Mr. Brad Jones  
New Mexico Energy, Minerals, & Natural Resources  
Oil Conservation Division, Environmental Bureau  
1220 S. St. Francis Drive  
Santa Fe, New Mexico 87504

Re: Comparison of Field versus Lab Compositing of BTEX soil samples  
Rice Operating Company, Junction Box Upgrade Work Plan

Sent via Certified Mail w/ Return Receipt No. 7006 0100 0001 2438 3944

Dear Mr. Jones:

On behalf of Rice Operating Company (ROC) I am submitting the attached comparison and analysis of field versus laboratory soil compositing for soil BTEX samples. This is to address the question of whether it is better to mix multiple samples in the field or to do so in the laboratory in order to produce a composite, representative sample for analysis. This work was undertaken in support of ROC's Junction Box Upgrade Work Plan to ensure the quality of their field analysis program.

In brief, this work indicates that field compositing of soil samples generally gives rise to *slightly* higher BTEX values than does laboratory compositing of multiple samples. This is presumably due to the likelihood that field compositing and packaging of soil samples better preserves sample integrity. It would therefore appear that field compositing would represent the better method of procuring soil samples for subsequent analysis of BTEX.

Please call me if you have any questions or wish to discuss any of the details of this study.

ROC is the service provider (agent) for various Salt Water Disposal Systems (SWDs) and has no ownership of any portion of pipeline, well or facility. The SWD Systems that ROC operates are owned by a consortium of oil producers, System Partners, who provide all operating capital on a percentage ownership/usage basis.

Sincerely,



L. Peter Galusky, Jr. Ph.D.  
Principal

Copy: Rice Operating Company,  
Edward Hansen (NMOCD) sent certified mail w/ return receipt  
No. 7006 0100 0001 2438 3937

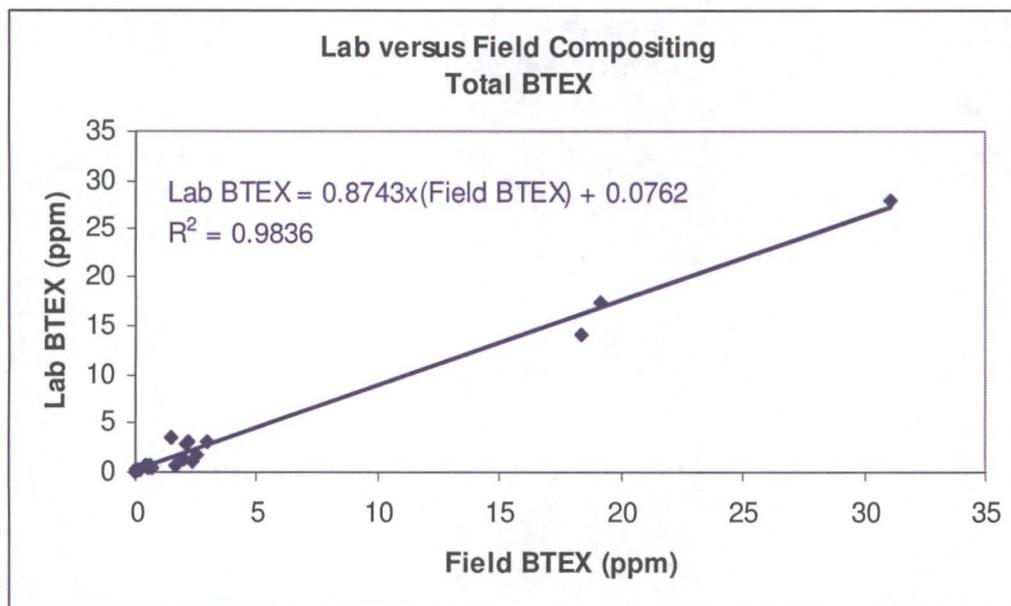
Attachment: As noted, above.

## Rice Operating Company

### Comparison of Field Compositing versus Laboratory Compositing of Soil BTEX Samples<sup>1</sup>

The careful mixing of multiple soil samples is critical in order to produce a representative, composite sample from a respective study area (such as an excavation face or bottom). Field technicians typically take four or five “grab” samples from excavation walls and/or bottom and send each of these to a laboratory for analysis of the composite, or mixed, sample. It would be far simpler, however, to composite such samples in the field. This study was undertaken to determine if field compositing produced results substantially different than laboratory compositing for the analysis of BTEX. Data were provided by Rice Operating Company encompassing 22 sampling locations over the period of 2004 through 2008.

A comparison of lab-composited soil samples versus field-composited soil samples revealed a close correspondence for total BTEX between the two methods (Figure 1).



**Figure 1** - Laboratory versus field-composited soil samples analyzed for BTEX.

The high R<sup>2</sup> value (0.9836) of the best-fit statistical regression line indicates a high degree of reliability in using the field-compositing method over the range of values observed. Below a “field-composited BTEX” value of 0.61 ppm the “lab-composited BTEX” values are slightly lower. However, above a field-composited BTEX value of 0.61 the lab-composited values run slightly lower. In other words, the field-composited values tended to produce slightly higher BTEX numbers above the point at which BTEX concentrations become significant.

There is a reason for this. BTEX is volatile and quickly biodegradable. The compositing and “packaging” of soil samples in the field minimize the handling and aeration that occur in the laboratory. Thus, field-composited soil samples lose less BTEX to evaporation and/or biodegradation prior to laboratory analysis. In other words, the field compositing and packaging of soil samples better preserves sample integrity, and for this reason would appear to represent the better method of procuring soil samples for subsequent analysis of BTEX.

<sup>1</sup> Prepared 03-12-09 by L. Peter Galusky, Jr. of Texerra.

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

**Texerra LLC**

20055 Laredo Lane Monument, CO 80132  
Tel: 719-339-6791 E-mail: [lpg@texerra.com](mailto:lpg@texerra.com)

April 30<sup>th</sup>, 2012

Mr. Edward Hansen  
New Mexico Energy, Minerals, & Natural Resources  
Oil Conservation Division, Environmental Bureau  
1220 S. St. Francis Drive  
Santa Fe, New Mexico 87504

Re: Comparison of 2011 Laboratory versus Field Measured Soil Chloride Values  
Rice Operating Company, Junction Box Upgrade Work Plan

Sent via Certified Mail w/ Return Receipt No. \_\_\_\_\_

Mr. Hansen:

On behalf of Rice Operating Company (ROC), I am submitting the attached comparison and analysis of 2011 laboratory versus field measured soil chloride values. This work was undertaken in support of ROC's Junction Box Upgrade Work Plan to ensure the quality of their field analysis program.

In brief, this work indicates that Rice's 2011 field chloride measurement efforts provided generally reliable and accurate estimates of the laboratory-measured values.

ROC is the service provider (agent) for various Salt Water Disposal Systems (SWDs) and has no ownership of any portion of pipeline, well or facility. The SWD Systems that ROC operates are owned by a consortium of oil producers, System Parties, who provide all operating capital on a percentage ownership/usage basis.

Please call me if you have any questions or wish to discuss this study.

Sincerely,

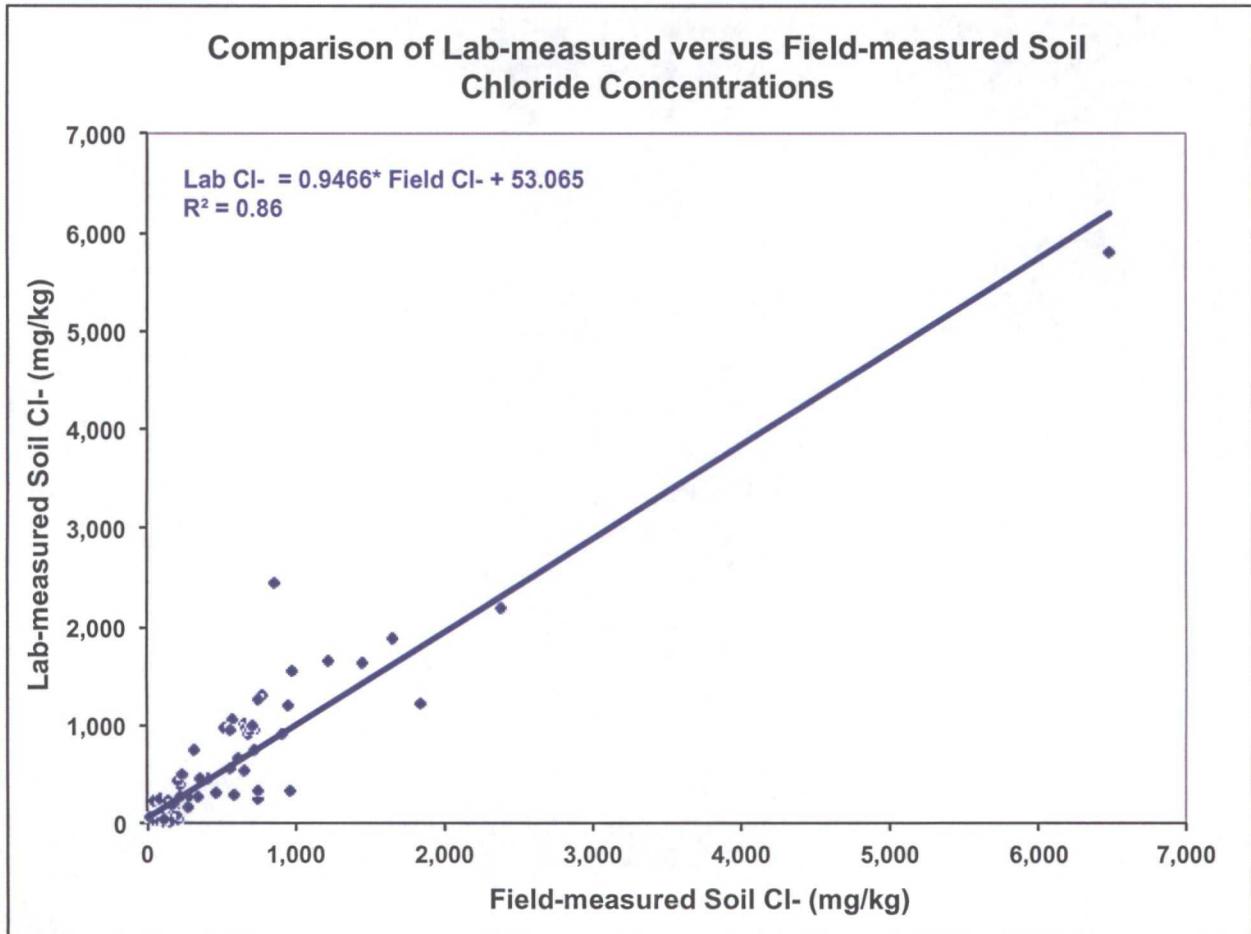


L. Peter Galusky, Jr. Ph.D.  
Principal

Copy: Rice Operating Company  
Attachment: As noted, above.

**Rice Operating Company**  
**Comparison of Laboratory to Field Measured Soil Chloride Concentrations**  
**Based upon 2011 Field Data<sup>1</sup>**

A representative sample of 81 pairs of laboratory versus field measured soil chloride values was compared to determine how well field measurements matched laboratory measurements. It is assumed that laboratory measurements better represent the “true” values due to the controlled environment that a laboratory provides. A simple plot of the laboratory versus field measured soil chloride values is given below (Figure 1).



**Figure 1** – Laboratory versus field measured soil chloride measurements (n = 81 paired sets).

A straight line fits the data well, and the R<sup>2</sup> value (0.86) indicates that field measurements provide a relatively consistent (precise) estimate of laboratory-measured values over a wide range of soil chloride concentrations.

Visual observation of the best-fit line, as well as the nearly 1:1 (0.9466) slope and the small (53.065) intercept value, indicates that field-measurement provides a generally unbiased (accurate) estimate laboratory-measured values over a wide range of soil chloride concentrations.

<sup>1</sup> Prepared on 04-27-2012 by L. Peter Galusky, Jr. of Texerra.

## Junction Box Upgrade Program Closure/Disclosure Submissions for 2011

Updated 4/30/11

										Closures	Disclosures
<b>BD</b>											
Closure	7									7	
Disclosure	8										8
<b>EME</b>											
Closure	22									22	
Disclosure	7										7
<b>Vacuum</b>											
Closure	1									1	
Disclosure	1										1
<b>Total</b>	<b>46</b>									<b>30</b>	<b>16</b>

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MAY - 1 2012

Oil Conservation Division  
1220 S. St. Francis Drive  
Santa Fe, NM 87505