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REPORTS

DATE:

4-1-10

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April 1st, 2010

2010 APR -9 P 1:02

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 2009 Field versus Laboratory Measured Soil Chloride Values
Rice Operating Company, Junction Box Upgrade Work Plan

Sent via Certified Mail w/ Return Receipt No. 7007 0710 0003 0305 3842

Mr. Hansen:

On behalf of Rice Operating Company (ROC) I am submitting the attached comparison and analysis of 2009 field versus laboratory 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 2009 field chloride measurement efforts provided reliable and accurate estimates of the true 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 any of the details of 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 2009 Field Data¹

A representative sample of 217 pairs of field versus laboratory 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).

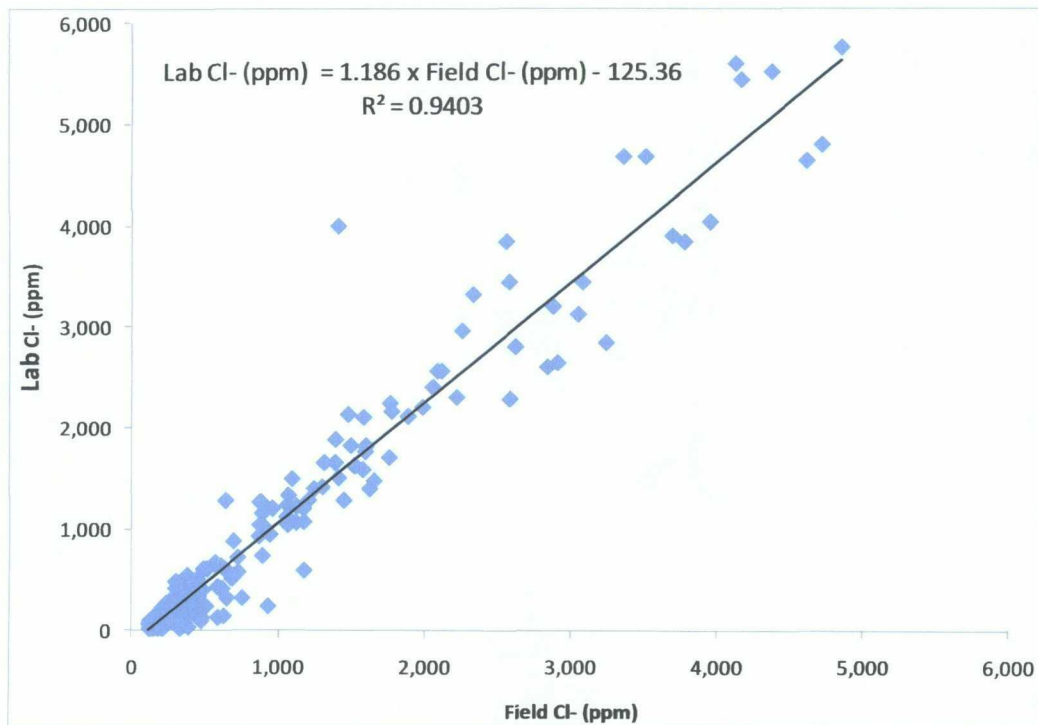


Figure 1 – Laboratory versus field measured soil chloride measurements (n = 217 paired sets).

A straight line fits the data very well, and the high R^2 value (0.94), indicates that field measurements are highly reliable (repeatable and consistent) over a wide range of field-measured soil chloride concentrations. The best-fit regression equation illustrates that field-measure chloride values will somewhat overestimate the laboratory values up to a field-measured value of approximately 675 ppm. At substantially higher chloride concentrations, field-measured values will slightly underestimate the laboratory values.

This comparison indicates that Rice field-measured soil chloride values provide reliable and conservative estimates for low to moderate soil chloride concentrations. Although the field measured values are slightly lower (by approximately 10%) for extremely high (> 2,000 ppm) soil chloride values, they nevertheless reliably indicate their relative magnitude. Taken together this comparison indicates that Rice’s 2009 field chloride measurement efforts provided reliable and accurate estimates of the true (laboratory measured) values.

¹ Prepared on 04-01-10 by L. Peter Galusky, Jr. of Texerra.