

1R - 427-211

# WORKPLANS

Date:

12-22-10

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

Texerra

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Tel: 917-339-6791 E-mail: lpg@texerra.com

December 22nd, 2010

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

RECEIVED

JAN - 3 2011

Re: Investigation and Characterization Plan Report & **Corrective Action Plan**  
NMOCD Case No. 1R427-211  
UL K Sect 6 Township 20 Range 37  
EME K-6 EOL EME SWD System Rice Operating Company.

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

Sent via E-mail and U.S. Certified Mail: No. 7008 1140 0001 3068 8715

Mr. Hansen,

This letter-report presents our findings of our field evaluation of soil chloride and TPH levels at the EME K-6 EOL site per the NMOCD ICP approved on September 2<sup>nd</sup>, 2009 and presents a Corrective Action Plan for this project.

The site is located approximately 2.5 miles southwest of Monument, New Mexico (Figure 1). This end-of-line (EOL) box was located next to an abandoned production facility. After the box lumber was removed, the site was delineated using a backhoe to collect soil samples at regular intervals creating a 30\*25\*12 ft deep excavation. Chloride field tests performed on each sample yielded relatively low concentrations throughout. PID measurements were also conducted on the samples which exhibited elevated concentrations and soils exhibited a noticeable hydrocarbon presence. Composite samples were collected from the final excavation for laboratory analysis. A bottom composite sample tested 208 ppm for chlorides, 201 ppm for gasoline range organics (GRO) and 927 ppm for diesel range organics (DRO). The excavated soil was blended on site and then backfilled into the excavation and contoured to the surrounding terrain. The disturbed surface was seeded with a blend of native vegetation on 11/13/2006. An identification plate was placed on the surface at the site of the former junction box to mark this location for future environmental considerations, and the site was disclosed to NMOCD in February of 2007 (Figure 2).

We conducted a field evaluation of residual soil chlorides and hydrocarbons on September 28<sup>th</sup>, 2009. Residual soil chloride levels were with few exceptions below 300 ppm throughout the area and depths encountered (Figure 3). Residual petroleum hydrocarbons (primarily as DRO) were encountered at some locations.

We assume that the legacy "oil field" residual soil chloride background concentration across this site is on the order of 200 to 250 ppm (based in part on the consistency of the lower values measured in this study). We thus believe that chlorides contributed from operations of the EME K-6 EOL were negligible. We further believe that the DRO found in some soil borings was contributed by an up-gradient source (an old oil tank battery, since removed), noting that the dark green areas in the map

## EME K-6 EOL

indicate weathered asphaltene that has flowed overland from this former up-source facility (Figures 4a, 4b & 5).

We submit that relatively low levels of residual soil chlorides found do not pose a risk of causing chloride impacts to groundwater. Nevertheless, as this location has been a relatively high traffic area for oil field vehicles there is a need for surface restoration. We therefore propose a **Corrective Action Plan** with the following work elements:

- Within a 45x45 ft area surrounding the former junction box, we will remove the upper approximately one to two feet of the caliche lease pad presently overlying the site, spreading this material over the adjacent existing lease road.
- We will backfill this area with clean, imported soil and make amendments as necessary (such as fertilizer and/or mulch) to facilitate the re-establishment of vegetation.
- We will re-seed the affected area with a native vegetation mix, surrounding the site with silt-net fencing to exclude wildlife during seedling establishment.
- We will subsequently provide a letter report with photographs documenting the tasks that have been completed and a request that NMOCD grant remediation termination or similar regulatory closure status.

Given the relatively low level of residual soil chlorides found during our evaluation we submit that the establishment of a natural vegetative "evaporation cap" will effectively preclude and delay (spreading out over time) the downward movement of chlorides and to thus protect the underlying groundwater. Similarly, although we believe that we did not cause the elevated levels of residual soil hydrocarbons observed, the natural evaporation cap will delay their downward migration to groundwater and facilitate their in-place natural attenuation.

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

Please do not hesitate to contact either myself or Mr. Conder if you have any questions or need additional information

Thank you.

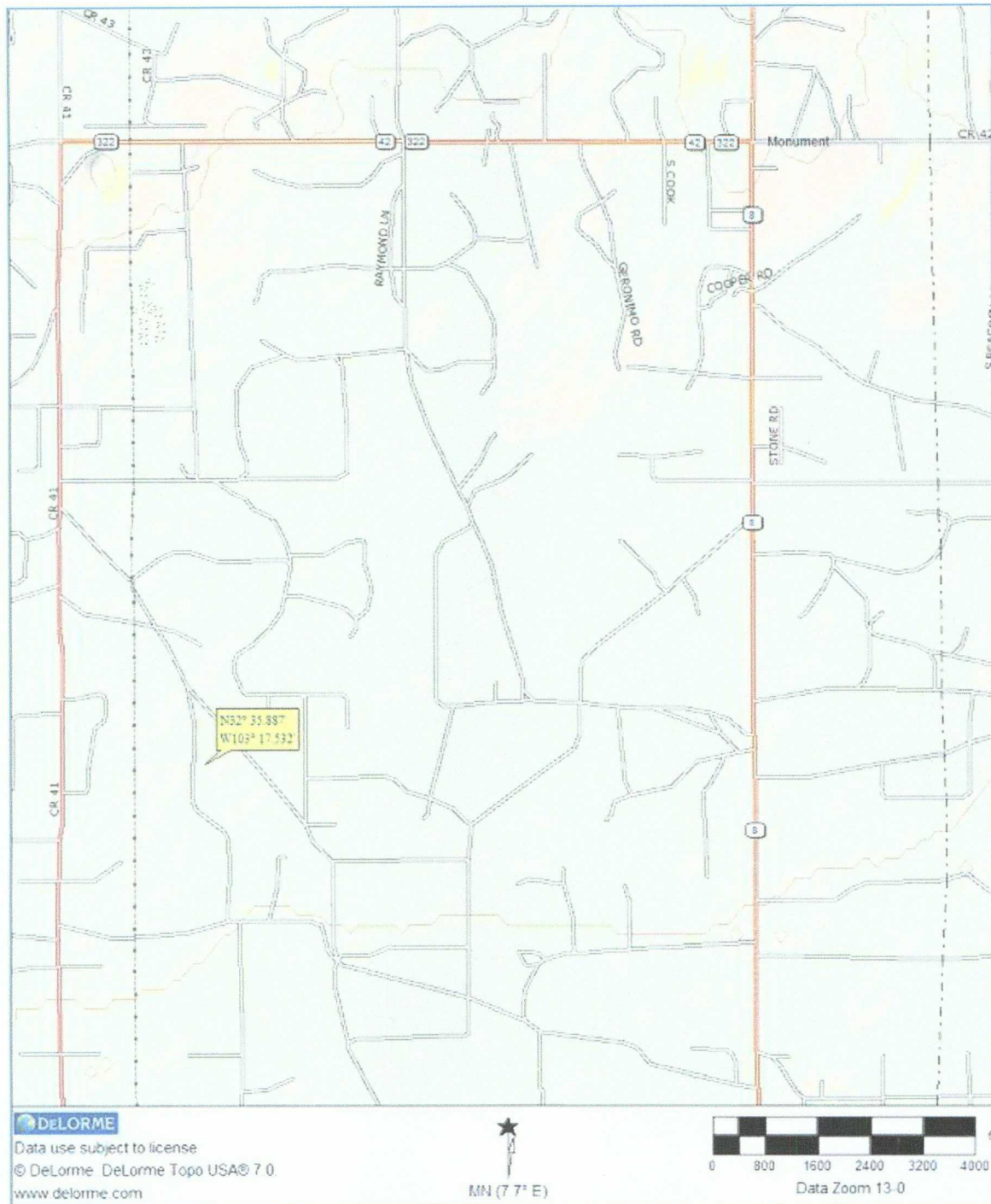
Sincerely,



L. Peter Galusky, Jr. Ph.D.

Attachments: As noted above

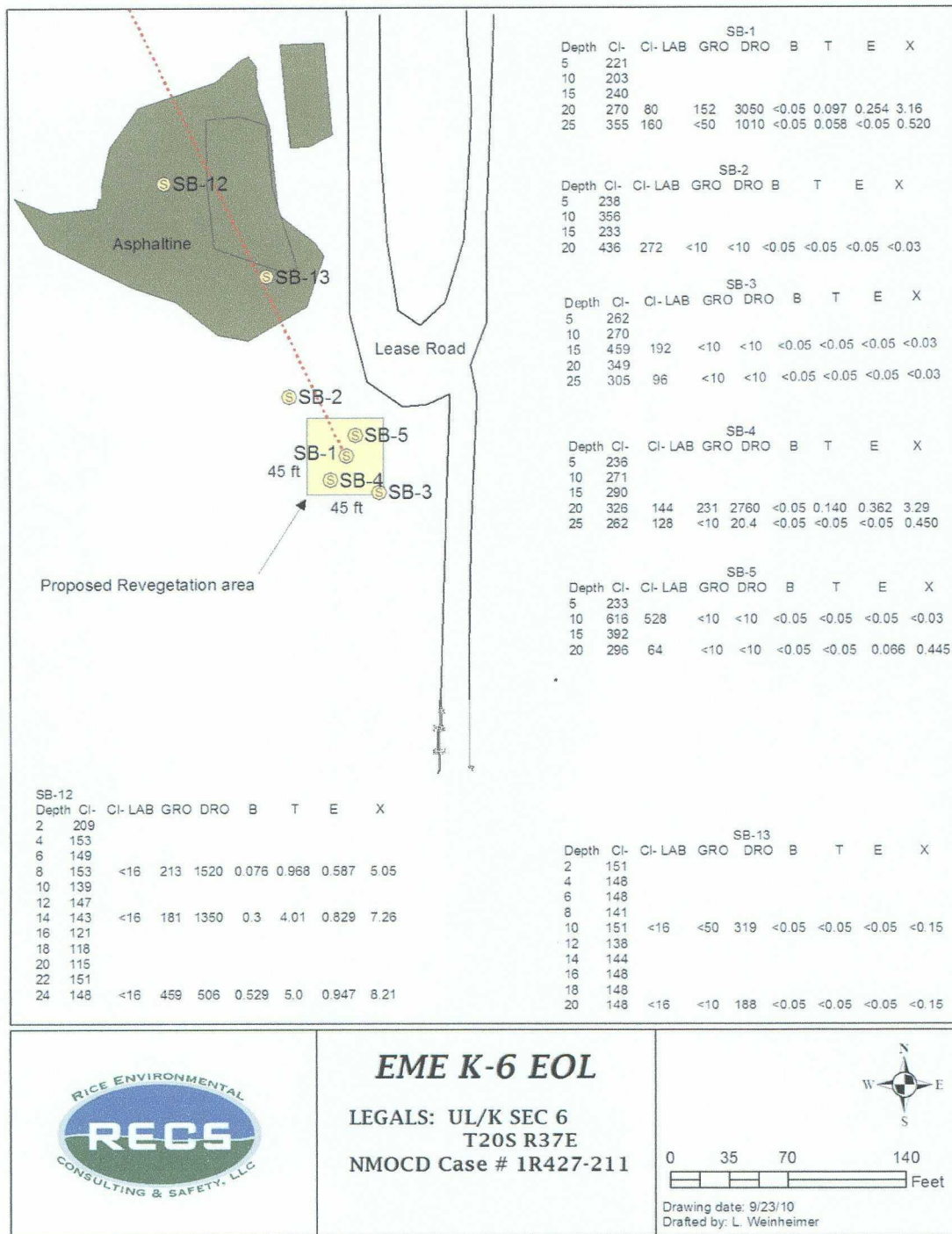
Copy: Rice Operating Company



**Figure 1** – EME K-6 EOL location. The general topographic gradient and presumed water table gradient is toward the southeast.

4

# EME K-6 EOL



**Figure 3** – EME K-6 EOL site map and soil boring chloride & TPH concentrations, as determined on 9.28.09 per the NMOCD approved ICP.



## EME K-6 EOL

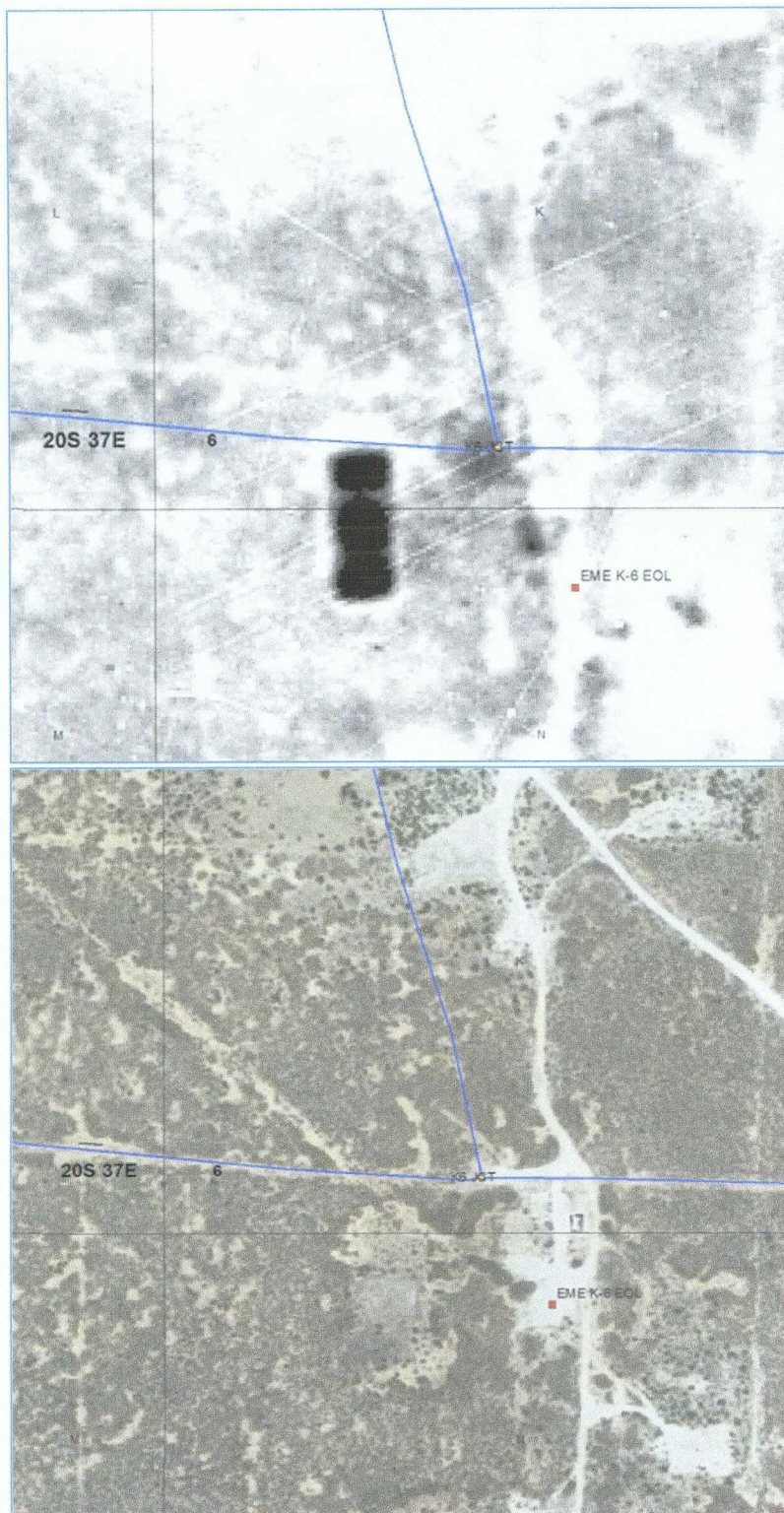


Figure 4a (above) – 1964 aerial photograph. Figure 4b (below) – 2009 aerial photograph.





**Figure 5** – Site photographs, May 2010.



Appendix – NMOCD Approval of ICP submitted on 08.24.09

Gmail - RE: 1R427-211 Rice Operating Company - EME Hartman Britt 'A' EOL - Submi... Page 1 of 3



L Peter Galusky <lpg.texerra@gmail.com>

**RE: 1R427-211 Rice Operating Company - EME Hartman  
Britt 'A' EOL - Submittal of Investigation and  
Characterization Plan**

2 messages

Hansen, Edward J., EMNRD <edwardj.hansen@state.nm.us>

Wed, Sep 2, 2009 at 1:08  
PM

To: Hack Conder <hconder@riceswd.com>

Cc: Katie Jones <kjones@riceswd.com>, lpg@texerra.com

Dear Mr. Conder:

The New Mexico Oil Conservation Division (OCD) has reviewed the submitted Investigation Characterization Plan (ICP), dated August 24, 2009, for the above-referenced site. The OCD hereby conditionally approves the following ICP for the Rice Operating Company site:

Rice EME Hartman Britt 'A' EOL site ICP submitted by Texerra on 8/31/2009 #1R427-211

Please include the chloride delineation concentration of 250 mg/Kg and the TPH delineation concentration of 100 mg/Kg for the vadose zone.

Also, please be advised that OCD approval of this plan 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, OCD 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 questions regarding this matter, please contact me at 505-476-3489.

Edward J. Hansen

Hydrologist

Environmental Bureau

<http://mail.google.com/mail/?ui=2&ik=eab5b575b1&view=pt&search=inbox&th=1237bf12...> 9/2/2009