# R. T. HICKS CONSULTANTS, LTD.

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August 4, 2011

HOBBS OCD

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RECEIVED

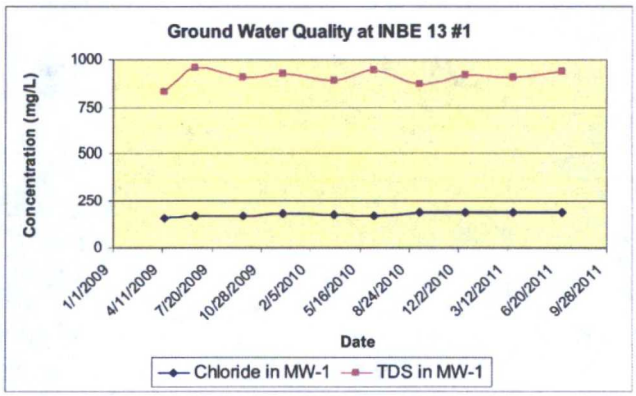
Mr. Daniel Sanchez
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: INBE 13 #1, Lea County NM, Sec 13, T11S, R33E, API 30-025-37840
NMOCD Case #: 1R-493

Mr. Sanchez,

On behalf of Pride Energy, R.T. Hicks Consultants, Ltd. submits this revised remediation plan for the above-referenced site. In a July 7, 2011 communication to Pride Energy, NMOCD requested an update on the actions associated with the September 3, 2008 Corrective Action Plan for the above-referenced site (approved by NMOCD on March 3, 2009). Specifically, NMOCD asked if the drilling waste from the burial trench had been removed and if not, why. Here is the short answer:

1. In an August 2008 email from the surface owner to Pride Energy (attached), Noble Energy agreed with several conclusions in our June 8, 2008 submission to NMOCD including that removal of the drilling waste may cause more environmental harm than it would cure. Noble Energy agreed that the best path was
   a. installation of the proposed monitoring well
   b. evaluation of the data, and
   c. determination if excavation and removal of the waste is necessary.
2. Ground water monitoring results demonstrate that regulated hydrocarbons are not present in the aquifer.
3. Ground water monitoring results show that chloride and TDS concentrations have been below ground water standards in all sampling events since April of 2009 (see Figure 1 and annual submissions to NMOCD)
4. At this time, data do not suggest that the buried waste is an imminent threat that may cause ground water to exceed the standards at a place of withdrawal for present or reasonably foreseeable future use.
5. Existing data continue to suggest that excavation and removal of the buried waste may cause more harm than good.

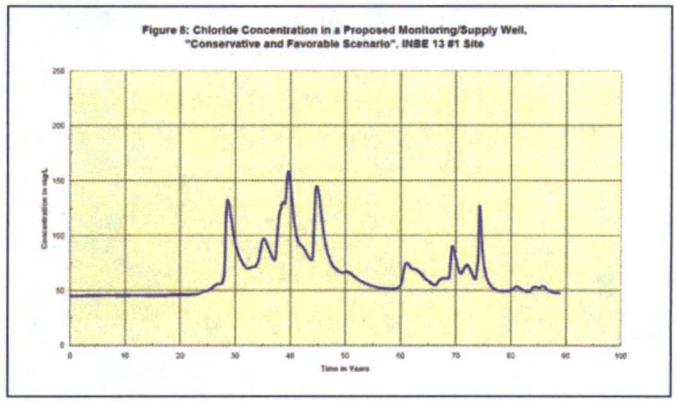



## Evaluation of New Data and Regulatory Developments

We believe it is prudent to consider new data and developments since the submissions of 2008 regarding this site. For example:

- The predictive modeling presented in the June 2008 submission could be updated to include
  - Correction of the vadose zone texture to include caliche from 0-30 feet rather than caliche from 0-24 feet and sandy clay from 24-30 feet
  - Use of a 100-year liner degradation schedule rather than the 40-year schedule employed in the 2008 simulation
  - Use of a 40-year lifespan of the liner system rather than 0 years
  - Use of a background chloride concentration of 185 mg/L rather than 50 mg/L
- In 2009, the Oil Conservation Commission approved a revision to the Pit Rule modifying the trench burial protocol. To support this change, NMOCD presented modeling evidence showing that trench burial under certain circumstances would result in slight impairment of ground water quality (maximum chloride concentration of 1,250 mg/L) for a period of about 2000 years.
- Ground water monitoring does not show increasing chloride concentrations over time and ground water quality is below the WQCC Standards

Changing the input data to the 2008 model will cause a reduction of the chloride flux to ground water. Specifically, a change from a 40-year degradation schedule to a 100-year schedule will reduce the chloride flux to ground water to about 40% and extend the time required for the mass of chloride to move through the vadose zone to ground water. This translates into a reduction of the predicted maximum chloride concentration under the most realistic scenario from an increase of about 100 mg/L above background conditions to 40 mg/L above background conditions. Figure 8 of the 2008 submission is reproduced at right.




A background chloride concentration of 185 mg/L and a predicted increase of 40 mg/L above background results in a maximum predicted chloride concentration of about 225 mg/L. This predicted concentration is not only below WQCC Standards but significantly less than the impact predicted by NMOCD models to support the change in the trench burial standards of the Pit Rule.

Appendix H of our 2008 submission provides a ranking of various remedies for this site. Below is the summary of the ranking presented in the 2008 report showing that improving the infiltration barrier by adding topsoil and re-vegetating provides a higher net environmental benefit than dig-haul-dispose.

| Corrective Action Alternative | Fresh Water | Public Health | Environment | Safety | Property | Total Score |
|---|---|---|---|---|---|---|
| Dig-Haul-Dispose-Import Soil | 3 | 3 | 1 | 1 | 1 | 9 |
| Improve Infiltration Barrier and Monitor | 2 | 2 | 3 | 2 | 3 | 12 |
| No Action | 1 | 1 | 2 | 3 | 2 | 9 |

## Proposed Modification to September 3, 2008 Remediation Plan

Plate 1 shows the proposed improvements to the existing infiltration barrier that will prevent ponding of precipitation over the liner systems installed at both the burial trench and the former pit area and to accelerate the re-vegetation of the site. With respect to improving the existing infiltration barrier, vegetation is as important as sloping the site to shed precipitation. Vegetation removes water from throughout the root zone and therefore minimizes the downward flux of water. After the proposed improvement, the infiltration barrier will be essentially identical to the Evapo-transpiration infiltration barrier tested by Sandia National Laboratories for use at hazardous and radioactive waste sites (See http://www.sandia.gov/caps/ALCD.htm). The plan calls for:

1. Grading the site to create a 3-5% slope that sheds surface flow away from the underlying liner systems while retaining a 4-foot soil buffer between the ground surface and liners. Prevention of ponding of precipitation limits the rate of percolation, thereby improving the infiltration barrier.
2. Creating alternating rows of topsoil (1-foot thick) and caliche. The theory behind this design is the rows of caliche will minimize wind erosion of topsoil and blowing sand and soil will eventually cover the caliche rows and accelerate re-vegetation. Vegetation effectively removes soil water, limiting the rate of percolation, thereby improving the existing infiltration barrier.
3. Excavation of ponding areas to the east and west of the site, using the topsoil from the excavation in the infiltration barrier.
4. Excavation of small drainage trenches that direct runoff to the ponding areas as shown in Plate 1.
5. Seeding the site with a mix approved by the landowner and surface leaseholder.
6. Quarterly ground water monitoring for two years after seeding the infiltration barrier.

If you have any questions concerning this revised remediation plan, please contact Matt Pride (918-524-9200) or me.

Sincerely,
R.T. Hicks Consultants

Randall T. Hicks
Principal

Copy: Matt Pride, Pride Energy Company
Jennifer Chamberlain, Noble Energy

## Randy Hicks

**From:** CDelHierro@nobleenergyinc.com
**Sent:** Wednesday, August 27, 2008 9:06 PM
**To:** Matthew Pride
**Cc:** Randall Hicks; trothermich@nobleenergyinc.com; BHilgers@nobleenergyinc.com
**Subject:** Inbe 13-1, Lea County, New Mexico

Dear Mr. Pride:

Noble Energy, Inc. has reviewed the June 26, 2008 submission to the NMOCD entitled, "Preliminary Characterization and Proposed Path Forward" for the site known as INBE 13 #1 located in Lea County, New Mexico, section 13- 11S- 33E: 1,980' FNL & 1,680' FEL (API #: 30- 025- 37840). This site lies on private property owned by our company. We have discussed the site with your consultant, Mr. Randall Hicks, and have reviewed additional data and information supplied by Mr. Hicks.

First, we share your concern that the excavation, removal and off-site disposal of the buried drilling waste could cause more environmental harm than it allegedly cures. We are also concerned that unnecessary truck transport through our property could harm our grossing lessee by endangering his livestock. If data do not demonstrate that the buried waste material must be removed, then we favor leaving the waste where it is.

Second, we believe it is premature to remove the waste to a landfill in the absence of a thorough review of the data currently in hand, and a review of the data that would be generated by the additional characterization proposed in your June submission. Therefore, we will support any action by Pride that would forestall the excavation and exportation of buried waste until the site data are available to demonstrate that the buried waste is or is not a threat to ground water. To that end, we urge Pride to install the proposed monitoring/supply well as soon as possible and before improving the infiltration barriers at the site.

Third, after all parties obtain complete ground water quality data from the proposed well (and potentially the contingency monitoring well located between the burial trench and the former reserve pit as outlined on Page 11 of the June submittal) we should evaluate the data and determine the best course of action for this site based upon the site-specific data. We note that the contingency plan calls for the excavation and exportation of waste in full compliance with the NMOCD letter of May 1, 2008. This contingency seems very appropriate.

Finally, the June 26 submission was not provided to me until August 22. Unfortunately, the report was filed in our Houston office and we did not recognize the importance of our response until Mr. Hicks notified us of the August 15 letter from the NMOCD. While we are in general agreement with the path forward outlined by Pride and the data and contingency plans appear to support the conclusions and recommendations, we would like more time to review the site history and discuss this issue more completely with our surface lessee. If the mechanism to gain more time and to allow for the collection of more data is Pride requesting a hearing to contest NMOCD's rejection of your proposal, then we support a request for a hearing. However, a simple extension of time to permit collection of the ground water data appears to be a more straight-forward approach.

We look forward to working with Pride Energy to resolve this issue in a manner that protects our property, protects our lessee, and minimizes any effect on the environment. If you have any questions concerning this letter or require additional input from Noble Energy, please contact me at 303-228-4160.

Sincerely,

Chris Del Hierro
Environmental Coordinator - Rockies
(office) 303.228.4160
(cell) 303.990.0757