

## Jones, Brad A., EMNRD

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**From:** Leking, Geoffrey R, EMNRD  
**Sent:** Friday, September 02, 2011 10:16 AM  
**To:** Randall Hicks  
**Cc:** 'John Starck'; 'Justin Roberts'; Jones, Brad A., EMNRD  
**Subject:** RE: Lusk Pit

Randall

This email represents concurrence by NMOCD-District 1 with NMOCD-Santa Fe's approval of the revised closure plan for the Linn Lusk Federal #3 drilling pit. Please notify the NMOCD-District 1 Office 48 hours prior to the date and time that field activities will begin. Please contact me if you have any questions. Thank you.

Geoffrey Leking  
Environmental Engineer  
NMOCD-Hobbs  
1625 N. French Drive  
Hobbs, NM 88240  
Office: (575) 393-6161 Ext. 113  
Cell: (575) 399-2990  
email: [geoffreyr.leking@state.nm.us](mailto:geoffreyr.leking@state.nm.us)

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**From:** Randall Hicks [<mailto:r@rthicksconsult.com>]  
**Sent:** Wednesday, August 31, 2011 9:47 AM  
**To:** Leking, Geoffrey R, EMNRD  
**Cc:** 'John Starck'; 'Justin Roberts'  
**Subject:** Lusk Pit

Geoffrey

Just checking in to see when we should schedule the contractor to close up the Lusk Pit. After NMOCD approval of the revised plan, we need to contact BLM and let them know what's up too.

Let me know if you need something from me.

Randall Hicks  
505-266-5004  
505-238-9515 - cell  
901 Rio Grande NW F-142  
Albuquerque, NM 87104

### CONFIDENTIALITY NOTICE

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**Jones, Brad A., EMNRD**

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**From:** Leking, Geoffrey R, EMNRD  
**Sent:** Wednesday, August 17, 2011 2:38 PM  
**To:** Jones, Brad A., EMNRD  
**Subject:** EGL (Formerly Lynx) Lusk Closure Plan

Brad

I have a Closure Plan received in District 1 on August 08, 2011. It correctly displays EGL Resources as the Operator. Randy has called and said that you approved this plan and now the district is to review and if acceptable approve it also. I just wanted to make sure this is the correct plan and that I should move ahead with my review. Thank you.

Geoffrey Leking  
Environmental Engineer  
NMOCD-Hobbs  
1625 N. French Drive  
Hobbs, NM 88240  
Office: (575) 393-6161 Ext. 113  
Cell: (575) 399-2990  
email: [geoffreyr.leking@state.nm.us](mailto:geoffreyr.leking@state.nm.us)



# New Mexico Energy, Minerals and Natural Resources Department

**Bill Richardson**  
Governor

**Jon Goldstein**  
Cabinet Secretary

**Jim Noel**  
Deputy Cabinet Secretary

**Mark Fesmire**  
Division Director  
Oil Conservation Division



June 2, 2010

Larry Scott  
Lynx Petroleum Consultants, Inc.  
P.O. Box 1708  
Hobbs, New Mexico 88241

**RE: Exception and Administrative Approval Request Regarding Lusk 31 Federal #3**  
**API Number: Not Assigned**  
**Location: Section 31, Township 18 South, Range 32 East, NMPM**  
**Lea County, New Mexico**

Dear Mr. Scott:

The Oil Conservation Division (OCD) has received and reviewed R. T. Hicks Consultants, Inc.'s (Hicks) request, submitted on the behalf of Lynx Petroleum Consultants, Inc. (Lynx) and dated May 24, 2010, for exceptions and administrative approvals to provisions of 19.15.17 NMAC regarding proposed drilling activities at the Lusk 31 Federal #3 located within Section 31, Township 18 South, Range 32 East NMPM, Lea County, New Mexico. The exception and administrative approval permit application request was not complete nor was it submitted in a format in which it could be accepted or considered for review by the OCD.

In an exception and administrative approval request it is important that the applicant submit a complete application in order to clearly identify which provisions it will comply with and which provisions it is requesting an exception or administrative approval. The exception and administrative approval request did not demonstrate that Lynx would comply with specific provisions of 19.15.17 NMAC nor did it properly identify which exceptions and administrative approvals to specific provisions of 19.15.17 NMAC were being requested. If properly submitted following this format, issues such as contradictory statements and proposals would not occur. One such example is where Lynx proposed an alternative soil cover design while making the statement that the provisions of the Pit Rule regarding the soil cover will be followed. It is especially important when requesting an exception that the operator submit a complete permit application. Please submit a copy of a complete permit application packet which includes with form C-144 and the additional required attachments, such as demonstrations of compliance to the siting criteria, a design and construction plan, operation and maintenance plan, and closure plan.

Pursuant the Paragraph (1) of Subsection A of 19.15.17.15 NMAC, "The environmental bureau in the division's Santa Fe office may grant an exception from a requirement or provision of



Lynx Petroleum Consultants, Inc  
Exception and Administrative Approval Request  
Lusk 31 Federal #3  
May 27, 2010  
Page 2 of 2

19.15.17 NMAC, if the operator demonstrates to the satisfaction of the environmental bureau in the division's Santa Fe office that the granting of the exception provides equivalent or better protection of fresh water, public health and the environment." Lynx did not complete this task for each provision in which it requested an exception. Lynx must demonstrate equivalency and better protection based upon sound science and engineering practices. If Lynx wishes to pursue an exception request, then it must provide appropriate demonstrations of equivalency and better protection.

The OCD will accept the signature of an agent for the operator if a notarized Power of Attorney (POA) form is submitted with each form C-144. The POA form must be signed by a person authorized to issue a POA. A copy of the POA form is acceptable if it is current. Please see page 3 (October 31, 2008) of the "19.15.17 NMAC (PITS, CLOSED-LOOP SYSTEMS, BELOW-GRADE TANKS AND SUMPS) FREQUENTLY ASKED QUESTIONS" document provided on the OCD website at the following hyperlink:

<http://www.emnrd.state.nm.us/oed/documents/PitRuleBaseFAQ20081031.pdf>

Please address the issues identified above regarding the May 24, 2010 request for exceptions and administrative approvals to provisions of 19.15.17 NMAC prior to resubmitting. If there are any questions regarding this matter, please do not hesitate to contact Mr. Brad Jones at (505) 476-3487 or [brad.a.jones@state.nm.us](mailto:brad.a.jones@state.nm.us).

Sincerely,

A handwritten signature in black ink that reads "Glenn von Gonten". The signature is fluid and cursive, with the first and last names being more prominent.

Glenn von Gonten  
Acting Environmental Bureau Chief

GvG/baj

cc: OCD District I Office, Hobbs

COPY

## R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

May 24, 2010

Mr. Geoffrey Leking  
NMOCD District  
1625 French Drive  
Hobbs, NM 88240  
Via E-Mail

Mr. Glenn Von Gonten  
NMOCD Environmental Bureau  
1220 St. Francis Drive  
Santa Fe, New Mexico  
Via E-Mail

2010 MAY 27 PM 12:52  
RECEIVED OGD

RE: Lusk 31 Federal #3, Lynx Petroleum Consultants

Dear Geoffrey and Glenn:

On behalf of Lynx Petroleum Consultants., we are requesting three exceptions to NMOCD Rules, unless NMOCD can administratively approve the proposed protocols. This letter confirms our intention to comply with all other prescriptive language in the Rule.

### **Proposed Alternative Confirmation Sampling Protocol**

As discussed in the attachment we request NMOCD review monitoring gypsum block moisture sensor leak detection system in lieu of soil sampling beneath the primary liner as a demonstration that the pit has or has not leaked. For reasons stated in the attachments, we believe this protocol provides better protection of fresh water, public health and the environment than compliance with the prescriptive language of NMOCD Rules. However, we will inspect the earth below the primary liner that is not fully monitored by the leak detection system for moisture and discoloration. We will collect samples of any wet or discolored earth that is not mixed with the drilling waste for burial in the trench.

### **Proposed Alternative Waste Sampling Protocol**

In order to comply with NMOCD Rules that establish concentration limits for trench burial, we propose a protocol that uses "mathematically mixing" of the laboratory results rather than physically mixing clean material with drilling waste. For reasons stated in the attachments, we believe this protocol provides better protection of the fresh water, public health and the environment than compliance with the prescriptive language of NMOCD Rules.

### **Proposed Use of the Drilling Pit as a Burial Trench**

If the drilling pit maintains integrity as expected, the pit closure method will meet the criteria (Part 11.J 1-8) for trench burial. However, the Rule states: "The operator shall use a separate on-site trench for closure of each drying pad associated with a closed-loop system or each temporary pit." We request that NMOCD review the proposal to use a drilling pit with demonstrated integrity in lieu of constructing a separate trench. For reasons stated in the attachments, we believe this protocol provides better protection of fresh water, public health and the environment than compliance with the prescriptive language of NMOCD Rules.

We attach a draft Public Notice that contains a provision for a public meeting immediately after the end of the public notice period. If the Director determines that sufficient interest

May 24, 2010

Page 2

exists to hold a public hearing, this meeting will allow stakeholders to informally address questions and concerns and perhaps avoid the need for a formal hearing. In working with NMED and DairiConcepts in Portales, we have found that these meetings can be less expensive, save time, are very productive and can resolve issues in lieu of a formal hearing. Please take a look at the proposed public notice and tell us what you think.

Finally, this submission is intended to begin a dialogue about how waste and environmental impact may be minimized through the process of an exception in this specific location. We believe the physical attributes of this site lend it to the modifications we have proposed here without undue threat to fresh water, human health and the environment. We look forward to NMOCD input and will be pleased to consider alternatives that are cost-effective and provide a higher degree of environmental protection. We also stand ready to provide answers to any questions of NMOCD and responses to any comments.

Sincerely,  
R.T. Hicks Consultants

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

Randall Hicks

Copy: Lynx Petroleum Consultants  
Bureau of Land Management

## **DRAFT NOTICE OF PUBLICATION**

### **State of New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division**

Notice is hereby given that pursuant to Oil Conservation Division Regulations, the following Proposed Exceptions to NMOCD Rules have been submitted to the Director of the Oil Conservation Division, 1220 S. St. Francis Dr., Santa Fe, New Mexico 87505, Telephone (505) 476-3440:

Larry Scott, President of Lynx Petroleum Consultants, Inc., which is a New Mexico corporation, Telephone (575) 392-6950, PO Box 1708, Hobbs, New Mexico 88241, has submitted an application for exceptions to NMOCD Rules for the Lusk 31 Federal #3 Drilling Pit site, located in Section 31, Township 18 South, Range 32 East, Lea County, New Mexico, approximately 12 miles south of Maljamar, New Mexico. Lynx Petroleum Consultants, Inc. is the operator of an oil and gas well at the site.

With the exception of the proposals described below, the operator will follow all mandates of NMOCD Rules. Proposal #1: In lieu of collecting soil samples beneath the liner to determine if a release occurred, the operator proposes to monitor a leak detection system. Proposal #2: In lieu of physically mixing one part drilling waste with three parts "clean soil" prior to sampling, the operator proposes to remove entrained brine from the waste to stabilize the material, obtain a sample of the undiluted waste and "mathematically mix" the sample results to demonstrate that the mass of constituents of concern in the waste meets the criteria of NMOCD Rules. Proposal #3: Because an intact drilling pit meets the construction specifications for a burial trench, the operator proposes to use the drilling pit for trench burial of the waste.

The division has determined that the application satisfies the requirements of OCD Rules and is therefore, administratively complete. The division will accept written comments on the proposed exceptions if the director receives them within 30 days after the date of publication of the public notice. Persons who are interested in obtaining further information, submitting comments, or wish to be placed on a facility-specific mailing list for future notices may contact the Environmental Bureau Chief of the Oil Conservation Division at the address given above. The application and administrative completeness determination may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday, or may also be viewed at the OCD web site (<http://www.emnrd.state.nm.us/ocd>). Persons who are interested in obtaining a copy of the application and administrative completeness determination may contact XXXXX at the address given above, or by telephone at 505-476-3484, or by email at XXXXXX..

The Director shall allow a period of at least thirty (30) days after the date of publication of this notice, during which interested persons may submit comments or request that NMOCD hold a public hearing. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

If the Director determines that a hearing is required, the operator has agreed to hold a public meeting at 6 pm on June (this date will be after the public notice period) at the Hobbs Country Club in Hobbs, New Mexico to address questions or concerns.

### **Siting Criteria**

NMOCD approved in place burial of drilling waste at this site. Our review of the data confirms that the site also meets the siting criteria for trench burial.

### **Amended Design Plan**

Figures 1 through 3 present the design plan for the proposed drilling pit and leak detection system. In addition to the specifications outlined in 19.15.17.11 NMAC, the construction contractors will follow the steps outlined below:

- I. Topsoil from the pit and pad site are segregated for restoration of the pit and site after operations cease.
- II. If practical, the contractor will separate coarser material from finer-grained material excavated from the pit for use in constructing the infiltration barrier over the buried waste when operations of the drilling pit cease.
- III. The proposed depth of the pit is sufficient to cause cuttings and residual drilling fluid solids to be at least 4-feet below the final ground surface after drilling ceases and free liquid has been removed from the pit.
- IV. Below the liner, the contractor will install the leak detection system described in the Confirmation Sampling Plan.
- V. Above the liner, a drain system composed of perforated pipe will allow removal of brine and associated constituents of concern from the residual solid materials.
- VI. Two-foot tall berms surround the pit providing ample freeboard.
- VII. The side slopes proposed for the pit are 1.5H:2V and the end slopes are 2H:1V.
- VIII. The factory welded liner will be installed in conformance with manufacturer's specification and consistent with NMOCD Rules.

We request administrative approval from the District Office for the proposed 1.5H:1V side slopes for the pit.

### **Operations Plan**

In addition to the specifications outlined in 19.15.17.12 NMAC, Lynx shall:

1. Use steel pit and lined outer horse shoe reserve pit to circulate mud and drill surface casing with fresh water.
2. Use steel pit and lined inner horse shoe reserve pit to circulate mud and drill intermediate casing with saturated brine.
3. Transfer sufficient brine fluid from inner pit to outer horse shoe pit to create appropriate salinity/weight of drilling fluid for drilling to total depth.
4. Use steel pit and lined outer horse shoe reserve pit to circulate mud and drill to total depth with cut brine.
5. When possible, add fresh water to inner pit to create brine/cut brine and transfer fluid to outer pit as necessary to accommodate for fluid loss during drilling.
6. During drilling the liner leak detection system is checked daily and weekly during drying and closure.

**C-144 Supplemental Documentation**  
**Lusk 31 Federal #3 API # 30-025-39593**

7. After drilling is complete, clear fluid is removed by vacuum trucks from the pits and/or drainage system pumping. Recovered clear cut brine might be re-used as make up water for the next well (some salt addition may be required) or sent to disposal.
8. After 10-20 days of drainage pumping and solids drying, the solids will be sampled as described below.

### **Solids Sampling Plan**

The contents of the pit will be sampled prior to any necessary stabilization according to the protocol outlined in NMOCD Rules for trench burial. We will obtain a five-point composite sample of the residual solids for laboratory analysis of:

- GRO and DRO using EPA Method 8015B rather than TPH concentration, as determined by EPA method 418.1
- Chloride, using EPA SW-846 method 1312 (SPLP) and determined by EPA method 300.1
- The concentrations of the inorganic water contaminants specified in Subsection A of 20.6.2.3103 NMAC EPA SW-846 method 1312 (SPLP) as determined by appropriate EPA methods, and
- The concentrations of the organic water contaminants specified in Subsection A of 20.6.2.3103 NMAC EPA SW-846 method 1312 (SPLP) as determined by appropriate EPA methods.

The NMOCD Rule 13.F.3.c specifies concentration limits for the residual mud and cuttings for trench burial. However, the Rule states that residual mud and cuttings may be mixed with three parts clean earth prior to sampling. As NMOCD understands, adding clean soil to the cuttings and mud provide no environmental benefit for trench burial of waste. For in-place burial, concentration limits are critical to the protection of the root zone. For trench burial, the Laws of Fluid Mechanics demonstrate that it is not the concentration that creates any threat to ground water or the root zone – it is the mass of the buried constituent (and to a lesser extent moisture content, grain size, and other factors). This letter formally requests an exception to NMOCD Rules unless NMOCD can administratively approve “mathematically mixing” the laboratory results from the waste sampling protocol rather than wasting clean earth material that can be used for construction of the infiltration barrier. The example below illustrates our proposed arithmetic.

When we physically mix 3 parts earth with a chloride concentration of 10 mg/L (SPLP preparation method) with drilling solids that contain 11,000 mg/L (SPLP preparation method) the resultant concentration is:

$$\text{Cl ppm in mixture} = \frac{(\text{Cl ppm in solids} * 1 \text{ part}) + (\text{Cl ppm in earth} * 3 \text{ parts})}{4 \text{ parts}}$$

Or for this example:

$$\text{Cl ppm in mixture} = \frac{11,000 + 10}{4} = 2,753 \text{ mg/L}$$

Upon receipt of the results, we will provide NMOCD with the calculation showing that the mass of constituents of concern that will be trench buried at the site meets the criteria established by NMOCD Rules. Excavation and removal of the solids in the brine pit (inner horse shoe) may be required to meet the criteria established in NMOCD Rules.

We conclude that this protocol provides equal or better protection of the environment than following the specific text of NMOCD Rules. This protocol is mathematically equal to compliance with the Rule and allows waste minimization.

We also ask for administrative approval to evaluate GRO and DRO rather than TPH as described above.

### **Confirmation Sampling Plan**

NMOCD Rules state “The operator shall test the soils beneath the temporary pit to determine whether a release has occurred.” The Rule then provides a protocol for this sampling protocol. This letter formally requests an exception to NMOCD Rules unless NMOCD can administratively approve employing the leak detection system described below in lieu of soil sampling beneath the primary liner as a demonstration that the pit has or has not leaked. However, as described below, we will inspect the earth below the primary liner that is not fully monitored by the leak detection system for moisture and discoloration.

The proposed leak detection system is essentially the same system approved by the New Mexico Environment Department for a brackish water pit in Sandoval County. For the Lusk Pit, a total of 10 leak detection grids are proposed. Each leak detection grid consists of:

- One gypsum block moisture sensor (Soil Moisture Corporation Model 5201F, [www.soilmoisture.com/prod\\_details.asp?prod\\_id=1087&cat\\_id=20](http://www.soilmoisture.com/prod_details.asp?prod_id=1087&cat_id=20)) installed in accordance with manufacturer’s specifications in
- A 6-inch layer of permeable earth (e.g. sand), which overlies
- A sheet of 20-mil string reinforced liner with dimensions of approximately 25 feet by 30 feet

Two leak detection grids will underlie the inner horse shoe brine pit, which will be completely removed to trench burial. Upon pit closure, the earth material beneath the pit will be visually inspected for wet or discolored earth.

Eight leak detection grids will be distributed beneath the outer horse shoe of the pit. As described in the closure plan, the drilling pit will become the burial trench provided that the liner maintains integrity. Therefore, we will inspect the side slopes of pit for wet earth or discoloration during the closure process.

**C-144 Supplemental Documentation**  
**Lusk 31 Federal #3 API # 30-025-39593**

Because the State of New Mexico has approved this system for the Sandoval County temporary pit, we hope that NMOCD will administratively approve this method “to determine if a release has occurred”. We conclude that this method of leak detection provides better protection of the environment than compliance with the specific mandates of NMOCD Rules because monitoring the integrity of the pit occurs during and after operation of the pit. Real-time leak detection will allow the operator to take action to mitigate impact to the environment whereas inspection during closure does not.

### **Closure Plan**

The design of the drilling pit is consistent with the design of a trench for burial (see Appendix B). Provided leak detection monitoring demonstrates that the drilling pit liner has maintained integrity and other design features are implemented during closure of the pit, we suggest that burial of waste in a drilling pit is equivalent to burial of waste in a separate trench. However, Section 19.15.17.F.3 of the Rule states: “The operator shall use a separate on-site trench for closure of each drying pad associated with a closed-loop system or each temporary pit.” This letter formally requests an exception to NMOCD Rules unless NMOCD can administratively approve using the existing pit in lieu of constructing a separate trench providing that other criteria set forth in this letter are met. We conclude that using a drilling pit with documented liner integrity provides equal or better protection of the environment than following the specific text of NMOCD Rules as required for an exception. Avoiding construction of a separate trench minimizes the environmental footprint of the drilling activity and thus minimizes waste.

The protocol for using the existing pit as a burial trench is:

- A. After drilling is complete, remove all standing fluids from the pit to disposal or storage via vacuum truck or drainage system pumping.
- B. Removal of residual brine and cut brine from the residual solids occurs via the drainage system (two solar pumps discharging about 2-4 GPM operated 24 hours/day)
- C. After 10-20 days of pumping and evaporation of fluids, the residual solids should have a bearing capacity to support the final cover, however the addition of some dry soil may be warranted.
- D. Fold the pit liner over the waste as prescribed in NMOCD Rules. Sew or otherwise amend new liner to the residual pit liner as required to meet the requirement of the Rule..
- E. Place a second liner over the folded liner in conformance with the language of NMOCD rules.
- F. Place the coarser-grained excavated material (if available) over the liner then the finer-grained material such that at least 4-feet separates the top of the encapsulated waste from the final ground surface after restoration.

If the leak detection system identifies a release, we will address the release under Part 29 of the Rules.

## Soil Cover, Re-vegetation, Site Reclamation

We will follow the protocols outlined in NMOCD Rules for placement of the soil cover, for re-vegetation and for site reclamation.

## Landowner Notification

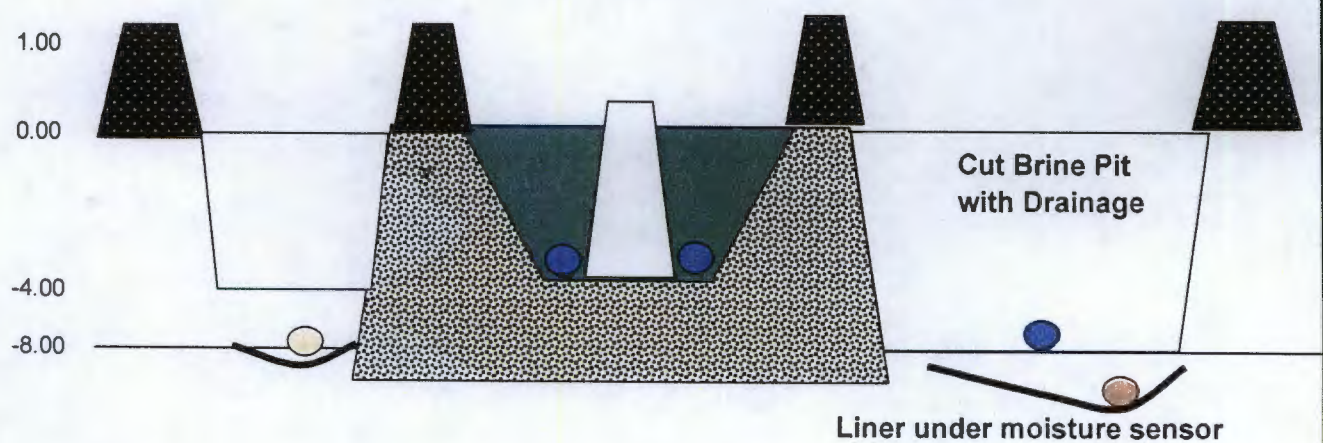
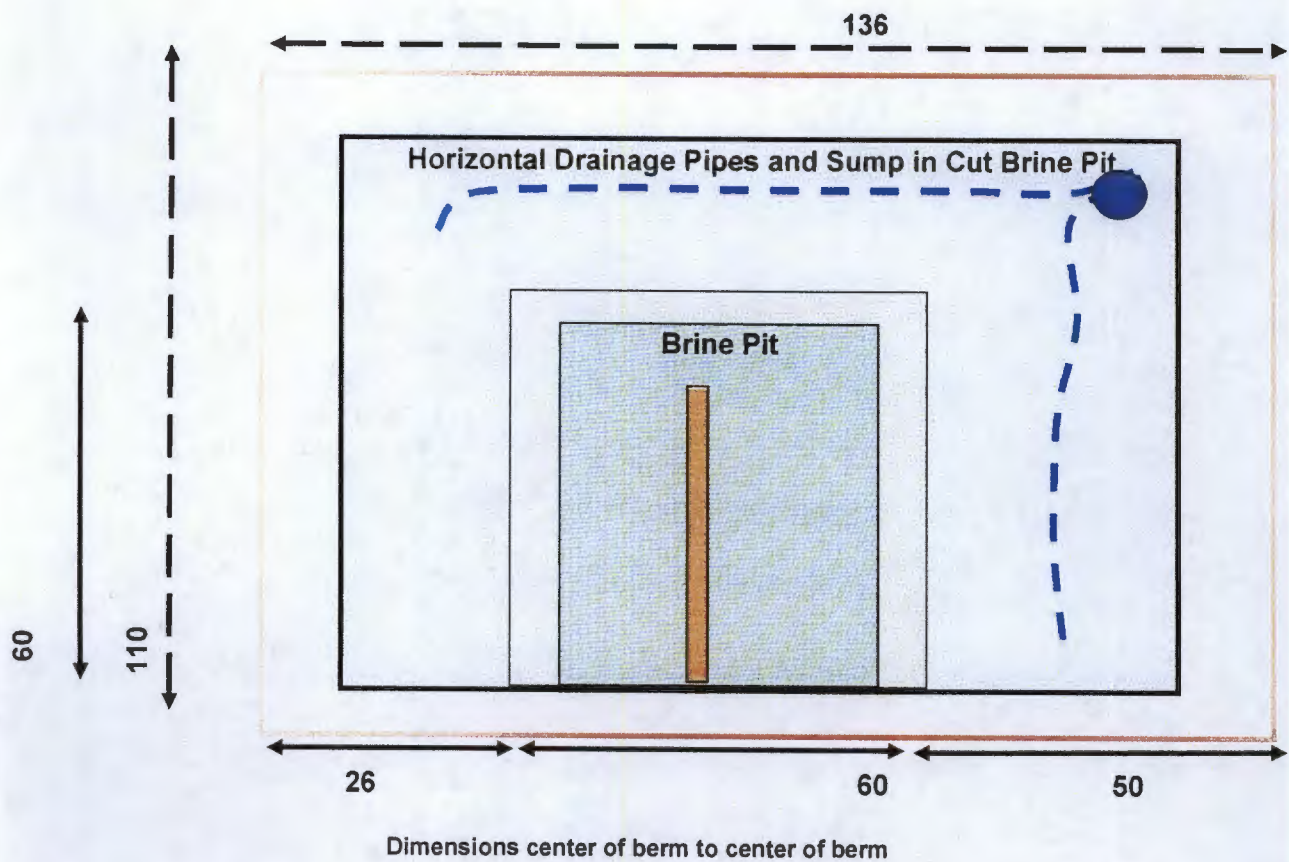
The Federal government is the surface landowner and their representative, the BLM, has approved the APD with the provision for on-site burial of cuttings.

## Permanent Marker

Lynx Petroleum Consultants will install a permanent marker per NMOCD Rules to identify the location of the buried cuttings and mud.

### Rationale for Administrative Approval or Approval of Exceptions for Identified Protocols

1. We believe the information presented herein demonstrates that the proposed alternative methods provide equal or better protection of fresh water, public health and the environment than following the prescriptive language of NMOC Rules.
2. The protocols require removal of liquids prior to implementing the closure method and disposal of the liquids in a division-approved facility. If possible, we will recycle or reuse the liquids for drilling future wells.
3. The proposed protocols outlined herein implement one or more of the following practices:
  - a. Waste minimization – the protocols do not call for mixing clean earth with waste
  - b. Reclamation – using the existing drilling pit for the burial trench reduces the size of disturbance of habitat
  - c. Reuse; recycling – the protocols call for re-using the pit and pit liners for the burial trench;
  - d. Reduction in available contaminant concentration – removal of cut brine and entrained constituents of concern from the residual solids via drainage system pumping will reduce the mass/concentration in the buried waste



Patent Pending

Pit Liner Schematics

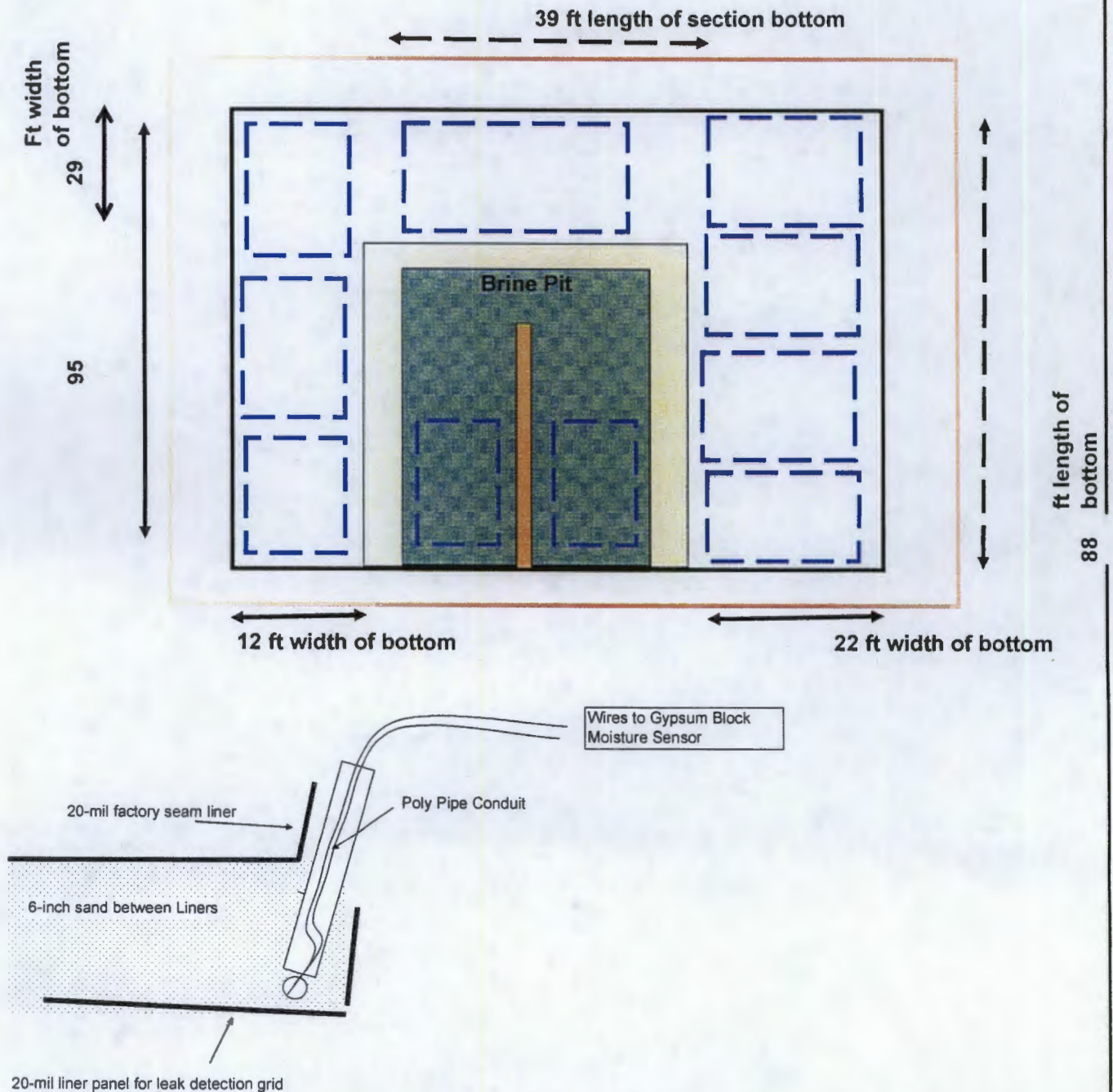
Figure 1

R.T. Hicks Consultants, Ltd.

Lynx Petroleum Consultants - Lusk 31 Fed #3

May-10

Soil Moisture Corporation Gypsum Block Model 5201F placed over 20-mil liner panel (dashed rectangles). Six inches of permeable material (e.g. soil or sand) placed between liner panel and primary pit liner. Poly pipe conduit protects electrical leads from block to surface. Sloped liner panel directs any seepage to moisture sensor



Patent Pending

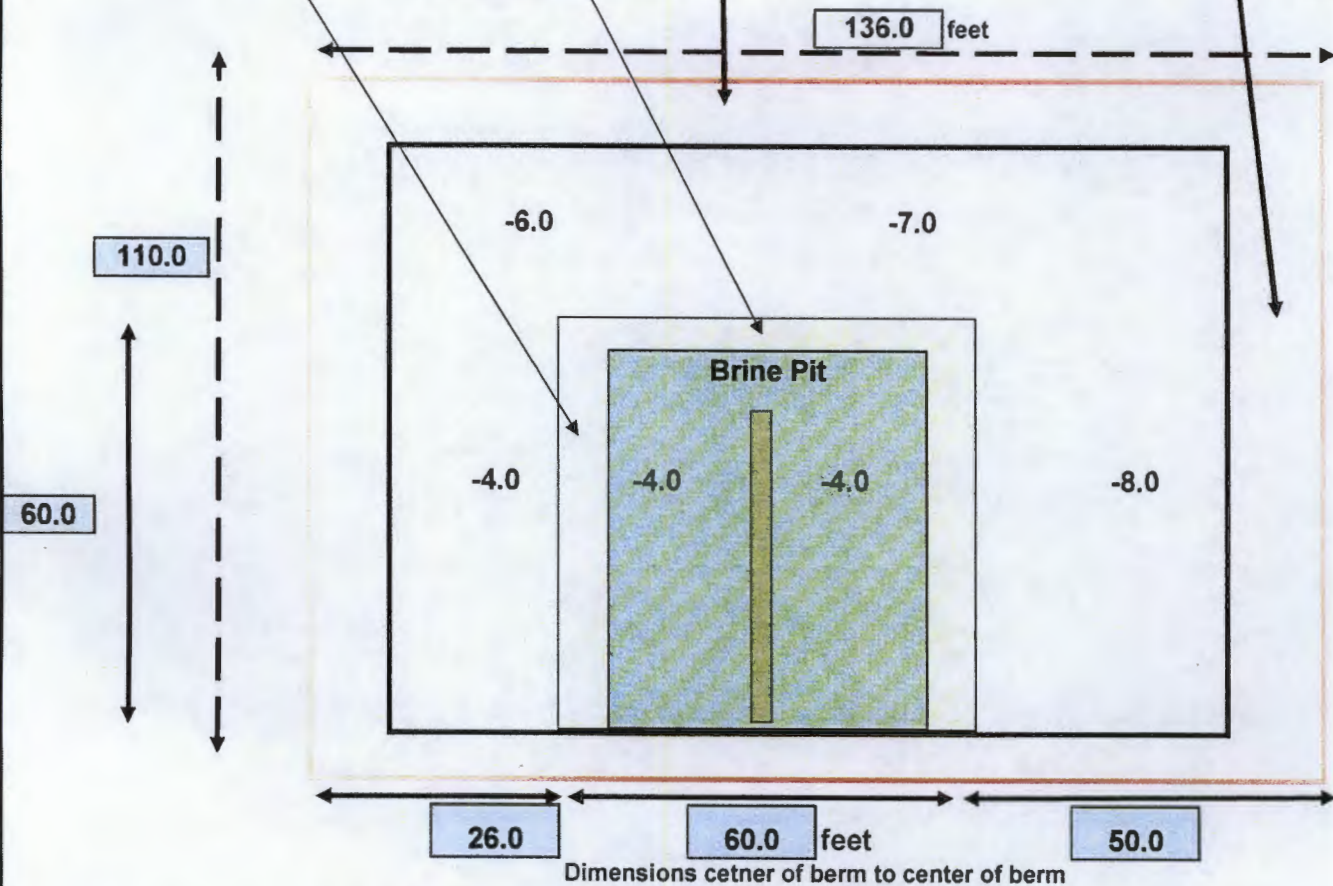
R.T. Hicks Consultants, Ltd.	Leak Detection System Schematic	Figure 2
	Lynx Petroleum Consultants - Lust 31 Fed #3	May-10

Horiz	1.5
Vert	1

Horiz	2.00
Vert	1.00

Horiz	1.50
Vert	1.00

Horiz	2.00
Vert	1.00



Depth Inputs	Upper Right corner	-7.0
	Lower Right corner	-8.0
	Upper Left corner	-6.0
	Lower Left corner	-4.0
	Brine Pit (both cells)	-4.0

Berm ht. 1

Volume of Inner Shoe  
Volume of Outer Shoe

2,122.95      bbls  
11,552.68      bbls

## Jones, Brad A., EMNRD

---

**From:** VonGonten, Glenn, EMNRD  
**Sent:** Monday, May 24, 2010 4:26 PM  
**To:** Fesmire, Mark, EMNRD; Sanchez, Daniel J., EMNRD; Jones, Brad A., EMNRD  
**Subject:** FW: Lusk 31Federal Pit Registration and Request for Exception  
**Attachments:** TransmitException+PN.pdf; Lusk31Fed#3Pit Applicationfinal.pdf

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**From:** Randall Hicks [mailto:r@rthicksconsult.com]  
**Sent:** Monday, May 24, 2010 4:12 PM  
**To:** VonGonten, Glenn, EMNRD; Leking, Geoffrey R, EMNRD  
**Cc:** lrscoth@leaco.net; james\_Amos@nm.blm.gov  
**Subject:** Lusk 31Federal Pit Registration and Request for Exception

Geoffrey and Glenn:

This is the first of two requests for exceptions to the Pit Rule for Lynx. The forthcoming application for Eddy BD State #3, which will be in your office shortly, is similar to this one.

We are sending a copy of this application to BLM Carlsbad, the surface owner's representative, by certified mail return receipt request – per the Rule.

After you give us your input on the content of the Public Notice, we will get it posted in the paper and sent to the appropriate parties. We understand that we are to send notice to the BLM, the County Commission and the State Land Office (who owns surface within ½ mile of the location) via certified mail return receipt. I presume that you will provide a list of “such other persons” for the mailing – or do you handle that via email from your office?

(2) The operator shall give written notice by certified mail, return receipt requested, to the surface owner of record where the pit, closed-loop system, below-grade tank or proposed alternative is, or will be, located; to surface owners of record within one-half mile of such location; to the county commission of the county where the pit, closed-loop system, below-grade tank or proposed alternative is, or will be, located; to the appropriate city officials if the pit, closed-loop system, below-grade tank or proposed alternative is, or will be, located within city limits, within one-half mile of the city limits or within the city's zoning and planning jurisdiction; to affected federal or tribal or pueblo governmental agencies; and to such other persons as the environmental bureau in the division's Santa Fe office may direct.

This is the second of four applications for an exception to the Rule. All four are similar. If you wish, I will be pleased to come to Santa Fe to address questions and take comments from NMOCD and/or the Pit Task Force.

Randall Hicks  
505-266-5004  
505-238-9515 - cell  
901 Rio Grande NW F-142  
Albuquerque, NM 87104

### CONFIDENTIALITY NOTICE

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# **R. T. HICKS CONSULTANTS, LTD.**

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

May 24, 2010

Mr. Geoffrey Leking  
NMOCD District  
1625 French Drive  
Hobbs, NM 88240  
Via E-Mail

Mr. Glenn Von Gonten  
NMOCD Environmental Bureau  
1220 St. Francis Drive  
Santa Fe, New Mexico  
Via E-Mail

RE: Lusk 31 Federal #3, Lynx Petroleum Consultants

Dear Geoffrey and Glenn:

On behalf of Lynx Petroleum Consultants., we are requesting three exceptions to NMOCD Rules, unless NMOCD can administratively approve the proposed protocols. This letter confirms our intention to comply with all other prescriptive language in the Rule.

## **Proposed Alternative Confirmation Sampling Protocol**

As discussed in the attachment we request NMOCD review monitoring gypsum block moisture sensor leak detection system in lieu of soil sampling beneath the primary liner as a demonstration that the pit has or has not leaked. For reasons stated in the attachments, we believe this protocol provides better protection of fresh water, public health and the environment than compliance with the prescriptive language of NMOCD Rules. However, we will inspect the earth below the primary liner that is not fully monitored by the leak detection system for moisture and discoloration. We will collect samples of any wet or discolored earth that is not mixed with the drilling waste for burial in the trench.

## **Proposed Alternative Waste Sampling Protocol**

In order to comply with NMOCD Rules that establish concentration limits for trench burial, we propose a protocol that uses "mathematically mixing" of the laboratory results rather than physically mixing clean material with drilling waste. For reasons stated in the attachments, we believe this protocol provides better protection of the fresh water, public health and the environment than compliance with the prescriptive language of NMOCD Rules.

## **Proposed Use of the Drilling Pit as a Burial Trench**

If the drilling pit maintains integrity as expected, the pit closure method will meet the criteria (Part 11.J 1-8) for trench burial. However, the Rule states: "The operator shall use a separate on-site trench for closure of each drying pad associated with a closed-loop system or each temporary pit." We request that NMOCD review the proposal to use a drilling pit with demonstrated integrity in lieu of constructing a separate trench. For reasons stated in the attachments, we believe this protocol provides better protection of fresh water, public health and the environment than compliance with the prescriptive language of NMOCD Rules.

We attach a draft Public Notice that contains a provision for a public meeting immediately after the end of the public notice period. If the Director determines that sufficient interest

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exists to hold a public hearing, this meeting will allow stakeholders to informally address questions and concerns and perhaps avoid the need for a formal hearing. In working with NMED and DairiConcepts in Portales, we have found that these meetings can be less expensive, save time, are very productive and can resolve issues in lieu of a formal hearing. Please take a look at the proposed public notice and tell us what you think.

Finally, this submission is intended to begin a dialogue about how waste and environmental impact may be minimized through the process of an exception in this specific location. We believe the physical attributes of this site lend it to the modifications we have proposed here without undue threat to fresh water, human health and the environment. We look forward to NMOCD input and will be pleased to consider alternatives that are cost-effective and provide a higher degree of environmental protection. We also stand ready to provide answers to any questions of NMOCD and responses to any comments.

Sincerely,  
R.T. Hicks Consultants

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

Randall Hicks

Copy: Lynx Petroleum Consultants  
Bureau of Land Management

## **DRAFT NOTICE OF PUBLICATION**

### **State of New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division**

Notice is hereby given that pursuant to Oil Conservation Division Regulations, the following Proposed Exceptions to NMOCD Rules have been submitted to the Director of the Oil Conservation Division, 1220 S. St. Francis Dr., Santa Fe, New Mexico 87505, Telephone (505) 476-3440:

Larry Scott, President of Lynx Petroleum Consultants, Inc., which is a New Mexico corporation, Telephone (575) 392-6950, PO Box 1708, Hobbs, New Mexico 88241, has submitted an application for exceptions to NMOCD Rules for the Lusk 31 Federal #3 Drilling Pit site, located in Section 31, Township 18 South, Range 32 East, Lea County, New Mexico, approximately 12 miles south of Maljamar, New Mexico. Lynx Petroleum Consultants, Inc. is the operator of an oil and gas well at the site.

With the exception of the proposals described below, the operator will follow all mandates of NMOCD Rules. Proposal #1: In lieu of collecting soil samples beneath the liner to determine if a release occurred, the operator proposes to monitor a leak detection system. Proposal #2: In lieu of physically mixing one part drilling waste with three parts "clean soil" prior to sampling, the operator proposes to remove entrained brine from the waste to stabilize the material, obtain a sample of the undiluted waste and "mathematically mix" the sample results to demonstrate that the mass of constituents of concern in the waste meets the criteria of NMOCD Rules. Proposal #3: Because an intact drilling pit meets the construction specifications for a burial trench, the operator proposes to use the drilling pit for trench burial of the waste.

The division has determined that the application satisfies the requirements of OCD Rules and is therefore, administratively complete. The division will accept written comments on the proposed exceptions if the director receives them within 30 days after the date of publication of the public notice. Persons who are interested in obtaining further information, submitting comments, or wish to be placed on a facility-specific mailing list for future notices may contact the Environmental Bureau Chief of the Oil Conservation Division at the address given above. The application and administrative completeness determination may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday, or may also be viewed at the OCD web site (<http://www.emnrd.state.nm.us/ocd>). Persons who are interested in obtaining a copy of the application and administrative completeness determination may contact XXXXX at the address given above, or by telephone at 505-476-3484, or by email at XXXXXX..

The Director shall allow a period of at least thirty (30) days after the date of publication of this notice, during which interested persons may submit comments or request that NMOCD hold a public hearing. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

If the Director determines that a hearing is required, the operator has agreed to hold a public meeting at 6 pm on June (this date will be after the public notice period) at the Hobbs Country Club in Hobbs, New Mexico to address questions or concerns.

### **Siting Criteria**

NMOCD approved in place burial of drilling waste at this site. Our review of the data confirms that the site also meets the siting criteria for trench burial.

### **Amended Design Plan**

Figures 1 through 3 present the design plan for the proposed drilling pit and leak detection system. In addition to the specifications outlined in 19.15.17.11 NMAC, the construction contractors will follow the steps outlined below:

- I. Topsoil from the pit and pad site are segregated for restoration of the pit and site after operations cease.
- II. If practical, the contractor will separate coarser material from finer-grained material excavated from the pit for use in constructing the infiltration barrier over the buried waste when operations of the drilling pit cease.
- III. The proposed depth of the pit is sufficient to cause cuttings and residual drilling fluid solids to be at least 4-feet below the final ground surface after drilling ceases and free liquid has been removed from the pit.
- IV. Below the liner, the contractor will install the leak detection system described in the Confirmation Sampling Plan.
- V. Above the liner, a drain system composed of perforated pipe will allow removal of brine and associated constituents of concern from the residual solid materials.
- VI. Two-foot tall berms surround the pit providing ample freeboard.
- VII. The side slopes proposed for the pit are 1.5H:2V and the end slopes are 2H:1V.
- VIII. The factory welded liner will be installed in conformance with manufacturer's specification and consistent with NMOCD Rules.

We request administrative approval from the District Office for the proposed 1.5H:1V side slopes for the pit.

### **Operations Plan**

In addition to the specifications outlined in 19.15.17.12 NMAC, Lynx shall:

1. Use steel pit and lined outer horse shoe reserve pit to circulate mud and drill surface casing with fresh water.
2. Use steel pit and lined inner horse shoe reserve pit to circulate mud and drill intermediate casing with saturated brine.
3. Transfer sufficient brine fluid from inner pit to outer horse shoe pit to create appropriate salinity/weight of drilling fluid for drilling to total depth.
4. Use steel pit and lined outer horse shoe reserve pit to circulate mud and drill to total depth with cut brine.
5. When possible, add fresh water to inner pit to create brine/cut brine and transfer fluid to outer pit as necessary to accommodate for fluid loss during drilling.
6. During drilling the liner leak detection system is checked daily and weekly during drying and closure.

**C-144 Supplemental Documentation**  
**Lusk 31 Federal #3 API # 30-025-39593**

7. After drilling is complete, clear fluid is removed by vacuum trucks from the pits and/or drainage system pumping. Recovered clear cut brine might be re-used as make up water for the next well (some salt addition may be required) or sent to disposal.
8. After 10-20 days of drainage pumping and solids drying, the solids will be sampled as described below.

### **Solids Sampling Plan**

The contents of the pit will be sampled prior to any necessary stabilization according to the protocol outlined in NMOCD Rules for trench burial. We will obtain a five-point composite sample of the residual solids for laboratory analysis of:

- GRO and DRO using EPA Method 8015B rather than TPH concentration, as determined by EPA method 418.1
- Chloride, using EPA SW-846 method 1312 (SPLP) and determined by EPA method 300.1
- The concentrations of the inorganic water contaminants specified in Subsection A of 20.6.2.3103 NMAC EPA SW-846 method 1312 (SPLP) as determined by appropriate EPA methods, and
- The concentrations of the organic water contaminants specified in Subsection A of 20.6.2.3103 NMAC EPA SW-846 method 1312 (SPLP) as determined by appropriate EPA methods.

The NMOCD Rule 13.F.3.c specifies concentration limits for the residual mud and cuttings for trench burial. However, the Rule states that residual mud and cuttings may be mixed with three parts clean earth prior to sampling. As NMOCD understands, adding clean soil to the cuttings and mud provide no environmental benefit for trench burial of waste. For in-place burial, concentration limits are critical to the protection of the root zone. For trench burial, the Laws of Fluid Mechanics demonstrate that it is not the concentration that creates any threat to ground water or the root zone – it is the mass of the buried constituent (and to a lesser extent moisture content, grain size, and other factors). This letter formally requests an exception to NMOCD Rules unless NMOCD can administratively approve “mathematically mixing” the laboratory results from the waste sampling protocol rather than wasting clean earth material that can be used for construction of the infiltration barrier. The example below illustrates our proposed arithmetic.

When we physically mix 3 parts earth with a chloride concentration of 10 mg/L (SPLP preparation method) with drilling solids that contain 11,000 mg/L (SPLP preparation method) the resultant concentration is:

$$\text{Cl ppm in mixture} = \frac{(\text{Cl ppm in solids} * 1 \text{ part}) + (\text{Cl ppm in earth} * 3 \text{ parts})}{4 \text{ parts}}$$

Or for this example:

$$\text{Cl ppm in mixture} = \frac{11,000 + 10}{4} = 2,753 \text{ mg/L}$$

Upon receipt of the results, we will provide NMOCD with the calculation showing that the mass of constituents of concern that will be trench buried at the site meets the criteria established by NMOCD Rules. Excavation and removal of the solids in the brine pit (inner horse shoe) may be required to meet the criteria established in NMOCD Rules.

We conclude that this protocol provides equal or better protection of the environment than following the specific text of NMOCD Rules. This protocol is mathematically equal to compliance with the Rule and allows waste minimization.

We also ask for administrative approval to evaluate GRO and DRO rather than TPH as described above.

### **Confirmation Sampling Plan**

NMOCD Rules state “The operator shall test the soils beneath the temporary pit to determine whether a release has occurred.” The Rule then provides a protocol for this sampling protocol. This letter formally requests an exception to NMOCD Rules unless NMOCD can administratively approve employing the leak detection system described below in lieu of soil sampling beneath the primary liner as a demonstration that the pit has or has not leaked. However, as described below, we will inspect the earth below the primary liner that is not fully monitored by the leak detection system for moisture and discoloration.

The proposed leak detection system is essentially the same system approved by the New Mexico Environment Department for a brackish water pit in Sandoval County. For the Lusk Pit, a total of 10 leak detection grids are proposed. Each leak detection grid consists of:

- One gypsum block moisture sensor (Soil Moisture Corporation Model 5201F, [www.soilmoisture.com/prod\\_details.asp?prod\\_id=1087&cat\\_id=20](http://www.soilmoisture.com/prod_details.asp?prod_id=1087&cat_id=20)) installed in accordance with manufacturer’s specifications in
- A 6-inch layer of permeable earth (e.g. sand), which overlies
- A sheet of 20-mil string reinforced liner with dimensions of approximately 25 feet by 30 feet

Two leak detection grids will underlie the inner horse shoe brine pit, which will be completely removed to trench burial. Upon pit closure, the earth material beneath the pit will be visually inspected for wet or discolored earth.

Eight leak detection grids will be distributed beneath the outer horse shoe of the pit. As described in the closure plan, the drilling pit will become the burial trench provided that the liner maintains integrity. Therefore, we will inspect the side slopes of pit for wet earth or discoloration during the closure process.

**C-144 Supplemental Documentation**  
**Lusk 31 Federal #3 API # 30-025-39593**

Because the State of New Mexico has approved this system for the Sandoval County temporary pit, we hope that NMOCD will administratively approve this method “to determine if a release has occurred”. We conclude that this method of leak detection provides better protection of the environment than compliance with the specific mandates of NMOCD Rules because monitoring the integrity of the pit occurs during and after operation of the pit. Real-time leak detection will allow the operator to take action to mitigate impact to the environment whereas inspection during closure does not.

### **Closure Plan**

The design of the drilling pit is consistent with the design of a trench for burial (see Appendix B). Provided leak detection monitoring demonstrates that the drilling pit liner has maintained integrity and other design features are implemented during closure of the pit, we suggest that burial of waste in a drilling pit is equivalent to burial of waste in a separate trench. However, Section 19.15.17.F.3 of the Rule states: “The operator shall use a separate on-site trench for closure of each drying pad associated with a closed-loop system or each temporary pit.” This letter formally requests an exception to NMOCD Rules unless NMOCD can administratively approve using the existing pit in lieu of constructing a separate trench providing that other criteria set forth in this letter are met. We conclude that using a drilling pit with documented liner integrity provides equal or better protection of the environment than following the specific text of NMOCD Rules as required for an exception. Avoiding construction of a separate trench minimizes the environmental footprint of the drilling activity and thus minimizes waste.

The protocol for using the existing pit as a burial trench is:

- A. After drilling is complete, remove all standing fluids from the pit to disposal or storage via vacuum truck or drainage system pumping.
- B. Removal of residual brine and cut brine from the residual solids occurs via the drainage system (two solar pumps discharging about 2-4 GPM operated 24 hours/day)
- C. After 10-20 days of pumping and evaporation of fluids, the residual solids should have a bearing capacity to support the final cover, however the addition of some dry soil may be warranted.
- D. Fold the pit liner over the waste as prescribed in NMOCD Rules. Sew or otherwise amend new liner to the residual pit liner as required to meet the requirement of the Rule..
- E. Place a second liner over the folded liner in conformance with the language of NMOCD rules.
- F. Place the coarser-grained excavated material (if available) over the liner then the finer-grained material such that at least 4-feet separates the top of the encapsulated waste from the final ground surface after restoration.

If the leak detection system identifies a release, we will address the release under Part 29 of the Rules.

### **Soil Cover, Re-vegetation, Site Reclamation**

We will follow the protocols outlined in NMOCD Rules for placement of the soil cover, for re-vegetation and for site reclamation.

### **Landowner Notification**

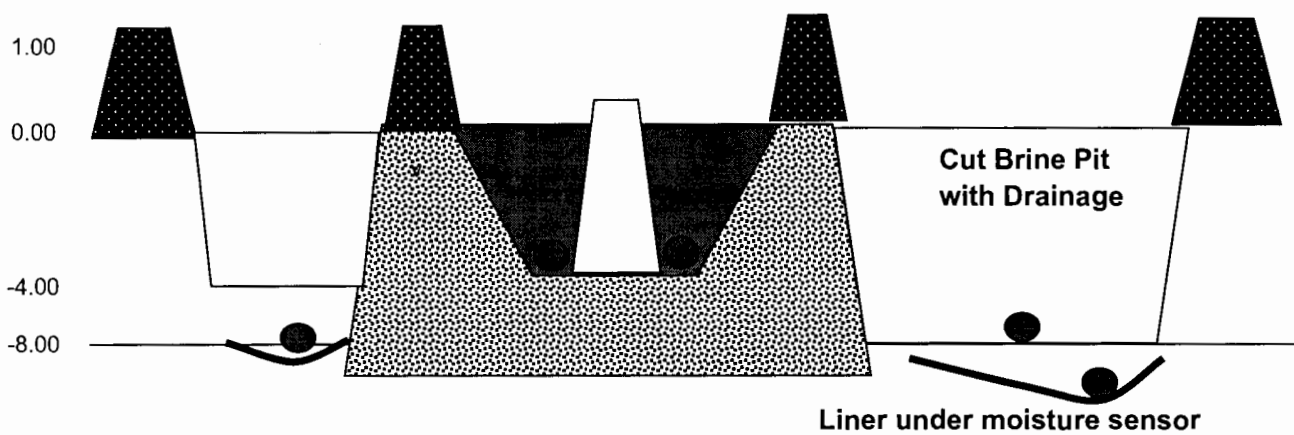
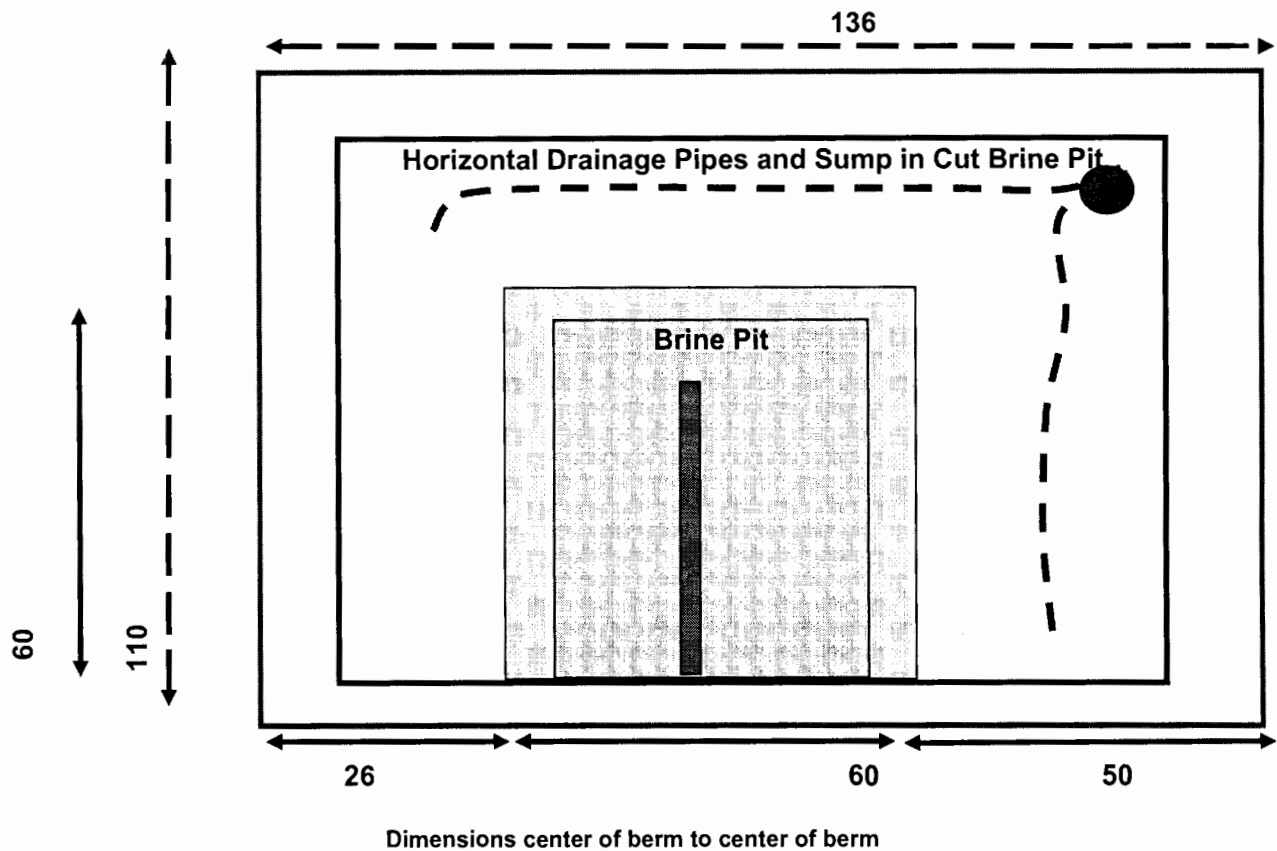
The Federal government is the surface landowner and their representative, the BLM, has approved the APD with the provision for on-site burial of cuttings.

### **Permanent Marker**

Lynx Petroleum Consultants will install a permanent marker per NMOCD Rules to identify the location of the buried cuttings and mud.

### **Rationale for Administrative Approval or Approval of Exceptions for Identified Protocols**

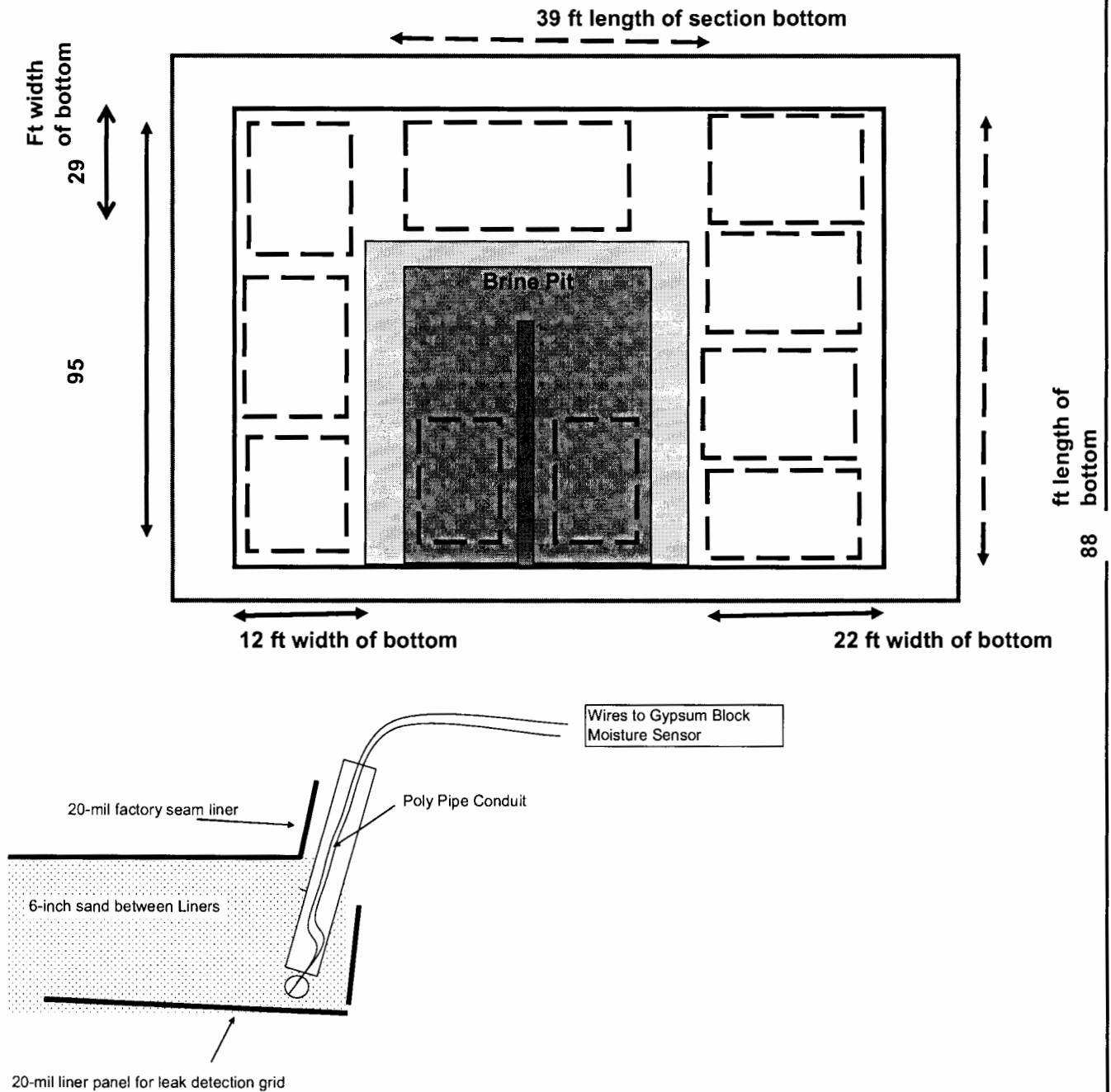
1. We believe the information presented herein demonstrates that the proposed alternative methods provide equal or better protection of fresh water, public health and the environment than following the prescriptive language of NMOCD Rules.
2. The protocols require removal of liquids prior to implementing the closure method and disposal of the liquids in a division-approved facility. If possible, we will recycle or reuse the liquids for drilling future wells.
3. The proposed protocols outlined herein implement one or more of the following practices:
  - a. Waste minimization – the protocols do not call for mixing clean earth with waste
  - b. Reclamation – using the existing drilling pit for the burial trench reduces the size of disturbance of habitat
  - c. Reuse; recycling – the protocols call for re-using the pit and pit liners for the burial trench;
  - d. Reduction in available contaminant concentration – removal of cut brine and entrained constituents of concern from the residual solids via drainage system pumping will reduce the mass/concentration in the buried waste



Patent Pending

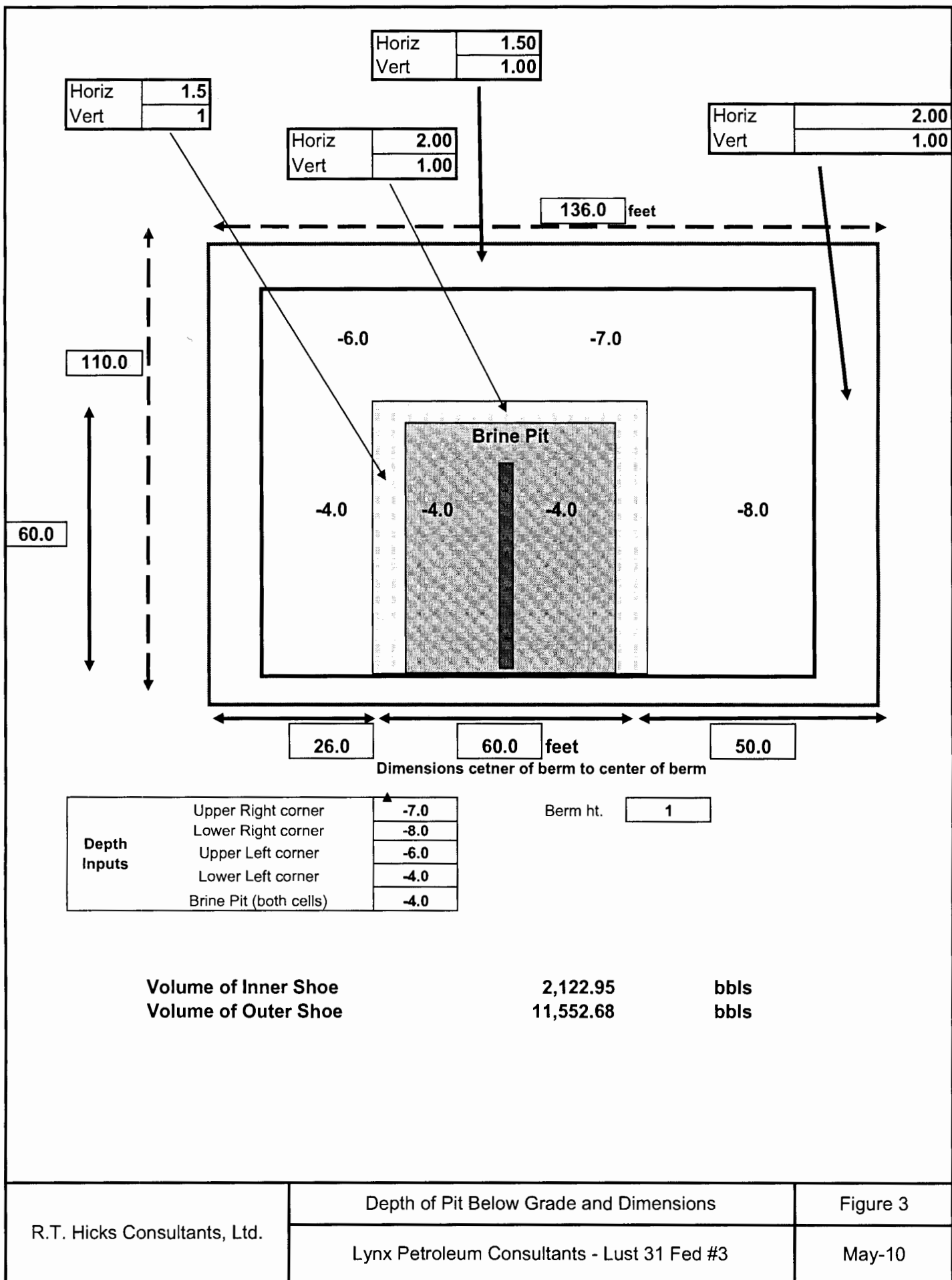
R.T. Hicks Consultants, Ltd.	Pit Liner Schematics	Figure 1
	Lynx Petroleum Consultants - Lusk 31 Fed #3	May-10

Soil Moisture Corporation Gypsum Block Model 5201F placed over 20-mil liner panel (dashed rectangles). Six inches of permeable material (e.g. soil or sand) placed between liner panel and primary pit liner. Poly pipe conduit protects electrical leads from block to surface. Sloped liner panel directs any seepage to moisture sensor



Patent Pending

R.T. Hicks Consultants, Ltd.	Leak Detection System Schematic	Figure 2
	Lynx Petroleum Consultants - Lust 31 Fed #3	May-10



Depth of Pit Below Grade and Dimensions

Figure 3

R.T. Hicks Consultants, Ltd.

Lynx Petroleum Consultants - Lust 31 Fed #3

May-10