District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

RECEIVED
AUG 11 2004
OCD-ARTESIA

Form C-101
March 4, 2004

Submit to appropriate District Office
State Lease - 6 Copies
Fee Lease - 5 Copies

☐ AMENDED REPORT

**APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE**

| [1] Operator Name and Address | [2] OGRID Number |
|---|---|
| NADEL AND GUSSMAN PERMIAN, L.L.C<br>601 N. MARIENFELD, SUITE 508<br>MIDLAND, TEXAS 79701 | 155615 |
| | [3] API Number<br>30 - 015 - 33556 |

| [4] Property Code | [5] Property Name | [6] Well No. |
|---|---|---|
| | BIG CHIEF FEE | 6 |

[7] Surface Location

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| F | 21 | 22-S | 28-E | | 1980' | NORTH | 1980' | WEST | EDDY |

[8] Proposed Bottom Hole Location If Different From Surface

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

| [9] Proposed Pool 1 | [10] Proposed Pool 2 |
|---|---|
| DUBLIN RANCH ; Morrow | |

Drilling Pit Location and Other Information

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| F | 21 | 22-S | 28-E | | 1980' | NORTH | 1980' | WEST | EDDY |

| Depth to ground water | Distance from nearest fresh water well | Distance from nearest surface water |
|---|---|---|
| 50' TO 100' | MORE THAN 1000' | MORE THAN 1000' |

| [11] Work Type Code | [12] Well Type Code | [13] Cable/Rotary | [14] Lease Type Code | [15] Ground Level Elevation |
|---|---|---|---|---|
| N | G | ROTARY | P | 3068' |

| [16] Multiple | [17] Proposed Depth | [18] Formation | [19] Contractor | [20] Spud Date |
|---|---|---|---|---|
| NO | 12,900' | MORROW | PATTERSON | +/- 08/19/04 |

[21] Proposed Casing and Cement Program

| Hole Size | Casing Size | Casing weight/foot | Setting Depth | Sacks of Cement | Estimated TOC |
|---|---|---|---|---|---|
| 17-1/2" | 13-3/8" | 48# | ~~400'~~ 300' | 450 SX | CIRC. TO SURFACE |
| 12-1/4" | 9-5/8" | 40# | 6100' | 1200 SX | CIRC. TO SURFACE |
| 8-3/4" | 5-1/2" | 17# & 20# | 12,900' | 1000 SX | TOC +/-7,000' |
| | | | | | |
| | | | | | |

22 Describe the proposed program. If this application is to DEEPEN or PLUG BACK, give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

DRILL AND COMPLETE WELL IN THE MORROW WITH A PROJECTED TD OF 12,900'.
NO H2S IS EXPECTED, BUT AN H2S CONTINGENCY LETTER IS ATTACHED.

[23] I hereby certify that the information given above is true and complete to the best of my knowledge and belief. **I further certify that the drilling pit will be constructed according to NMOCD guidelines ☒, a general permit ☐, or an (attached) alternative OCD-approved plan ☐.**

Signature: Josh Fernau

Printed name: JOSH FERNAU

Title: STAFF ENGINEER

E-mail Address: joshf@naguss.com

Date: 08/10/04

Phone: (432) 682-4429

OIL CONSERVATION DIVISION

Approved by:

TIM W. GUM
DISTRICT II SUPERVISOR

Title:

Approval Date: AUG 17 2004

Expiration Date: AUG 17 2005

Conditions of Approval:

Attached ☐

CEMENT TO COVER ALL OIL, GAS AND WATER BEARING ZONES

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-144
March 12, 2004

**For drilling and production facilities,** submit to appropriate NMOCD District Office.
**For downstream facilities,** submit to Santa Fe office

# Pit or Below-Grade Tank Registration or Closure

Is pit or below-grade tank covered by a "general plan"? Yes ☐ No ☒
Type of action: Registration of a pit or below-grade tank ☒ Closure of a pit or below-grade tank ☐

Operator: NADEL AND GUSSMAN PERMIAN Telephone: (432) 682-4429 e-mail address:
Address: 601 N. Marienfeld, Suite 508 Midland, TX 79701
Facility or well name: BIG CHIEF FEE #6 API #: 30-015- U/L or Qtr/Qtr: F Sec: 21 T: 22S R: 28E
County: Eddy Latitude: N32° 22' 48.0" Longitude: W104°05'41.4" NAD: 1927 ☐ 1983 ☐ Surface Owner Federal ☐ State ☐ Private ☒ Indian ☐

| **Pit** | **Below-grade tank** | | |
|---|---|---|---|
| Type: Drilling ☒ Production ☐ Disposal ☐<br>Workover ☐ Emergency ☐<br>Lined ☒ Unlined ☐<br>Liner type: Synthetic ☒ Thickness 20 mil Clay ☐<br>Volume 20,000 bbl | Volume: bbl Type of fluid:<br>Construction material:<br>Double-walled, with leak detection? Yes ☐ If not, explain why not. | | |
| Depth to ground water (vertical distance from bottom of pit to seasonal high water elevation of ground water.) | Less than 50 feet<br>50 feet or more, but less than 100 feet<br>100 feet or more | (20 points)<br>(10 points)<br>( 0 points) | 10 |
| Wellhead protection area: (Less than 200 feet from a private domestic water source, or less than 1000 feet from all other water sources.) | Yes<br>No | (20 points)<br>( 0 points) | 0 |
| Distance to surface water: (horizontal distance to all wetlands, playas, irrigation canals, ditches, and perennial and ephemeral watercourses.) | Less than 200 feet<br>200 feet or more, but less than 1000 feet<br>1000 feet or more | (20 points)<br>(10 points)<br>( 0 points) | 0 |
| | **Ranking Score (Total Points)** | | 10 |

**If this is a pit closure:** (1) attach a diagram of the facility showing the pit's relationship to other equipment and tanks. (2) Indicate disposal location: onsite ☐ offsite ☐ If offsite, name of facility . (3) Attach a general description of remedial action taken including remediation start date and end date. (4) Groundwater encountered: No ☐ Yes ☐ If yes, show depth below ground surface ft. and attach sample results. (5) Attach soil sample results and a diagram of sample locations and excavations.

I hereby certify that the information above is true and complete to the best of my knowledge and belief. **I further certify that the above-described pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☒, a general permit ☐ or an (attached) alternative OCD-approved plan ☐.**
Date: 08/10/04
Printed Name/Title Josh Fernau , Staff Engineer Signature

Your certification and NMOCD approval of this application/closure does not relieve the operator of liability should the contents of the pit or tank contaminate ground water or otherwise endanger public health or the environment. Nor does it relieve the operator of its responsibility for compliance with any other federal, state, or local laws and/or regulations.

Approval:
Date: AUG 12 2004
Printed Name/Title Signature

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240

DISTRICT II
811 South First, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

# OIL CONSERVATION DIVISION

2040 South Pacheco
Santa Fe, New Mexico 87504-2088

Form C-102
Revised March 17, 1999

Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

☐ AMENDED REPORT

## WELL LOCATION AND ACREAGE DEDICATION PLAT

| API Number | Pool Code | Pool Name |
|---|---|---|
| | | |

| Property Code | Property Name | Well Number |
|---|---|---|
| | BIG CHIEF FEE | 6 |
| **OGRID No.** | **Operator Name** | **Elevation** |
| | NADEL AND GUSSMAN PERMIAN | 3068' |

### Surface Location

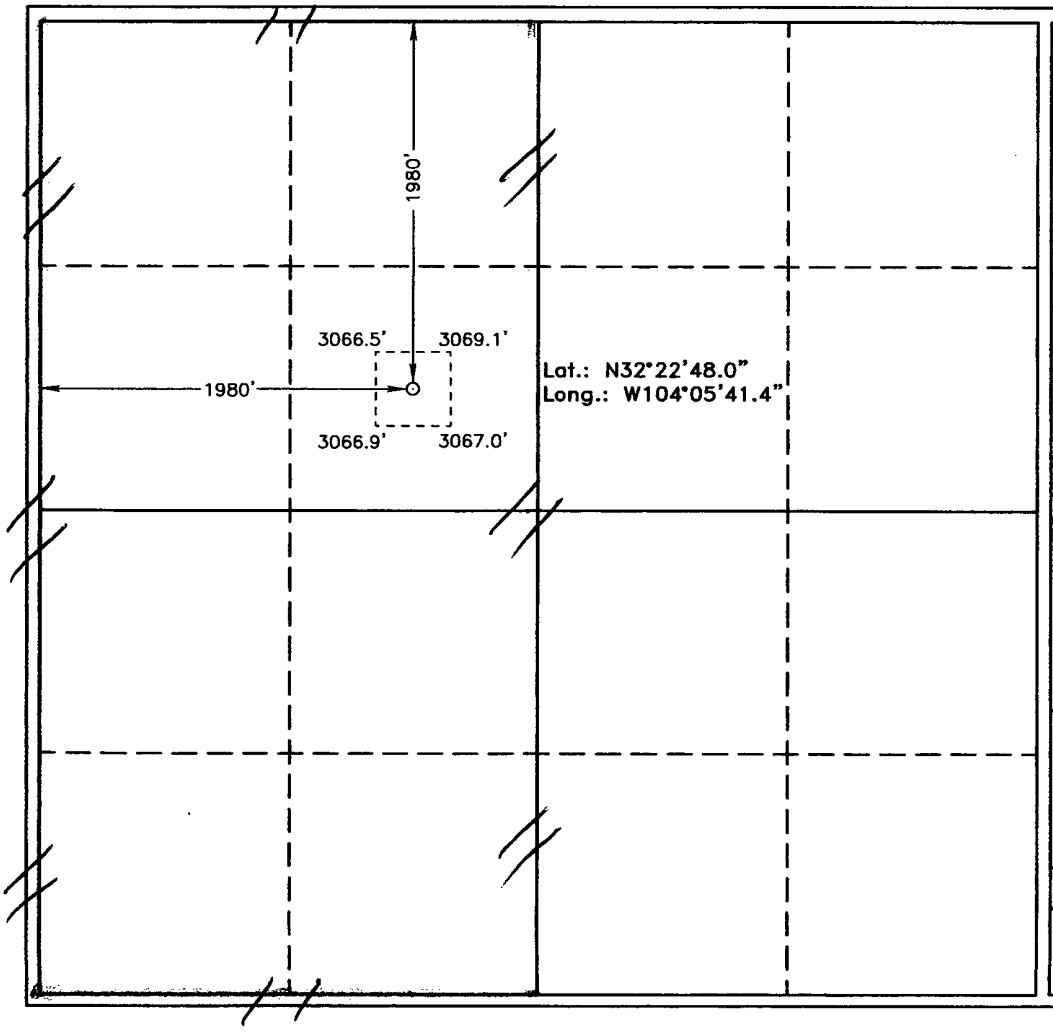
| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| F | 21 | 22 S | 28 E | | 1980 | NORTH | 1980 | WEST | EDDY |

### Bottom Hole Location If Different From Surface

| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

| Dedicated Acres | Joint or Infill | Consolidation Code | Order No. |
|---|---|---|---|
| 320 | | | |

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION




### OPERATOR CERTIFICATION

*I hereby certify the the information contained herein is true and complete to the best of my knowledge and belief.*

Signature

Josh Ferran
Printed Name

Staff Engineer
Title

08/10/04
Date

### SURVEYOR CERTIFICATION

*I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervison, and that the same is true and correct to the best of my belief.*

AUGUST 03, 2004
Date Surveyed

Signature & Seal of Professional Surveyor

GARY L. JONES
NEW MEXICO
No. 4510
REGISTERED PROFESSIONAL LAND SURVEYOR

Certificate No. Gary L. Jones 7977

JLP

BASIN SURVEYS

**NADEL AND GUSSMAN PERMIAN, L.L.C.**
**601 N. Marienfeld, Suite 508**
**Midland, TX 79701**
**(432) 682-4429 (Office)**
**(432) 682-4325 (Fax)**

08/10/04

Mr. Bryan Arrant
District 2 Geologist
New Mexico Oil and Gas Division
1301 West Grand Avenue
Artesia, NM 88210

**Re: Big Chief Fee #6**
**1980' FNL, 1980' FWL**
**Unit Letter F, Sec. 21-T22S-R28E**
**Eddy, NM**
**Rule 118 H2S Exposure**

Dear Mr. Arrant,

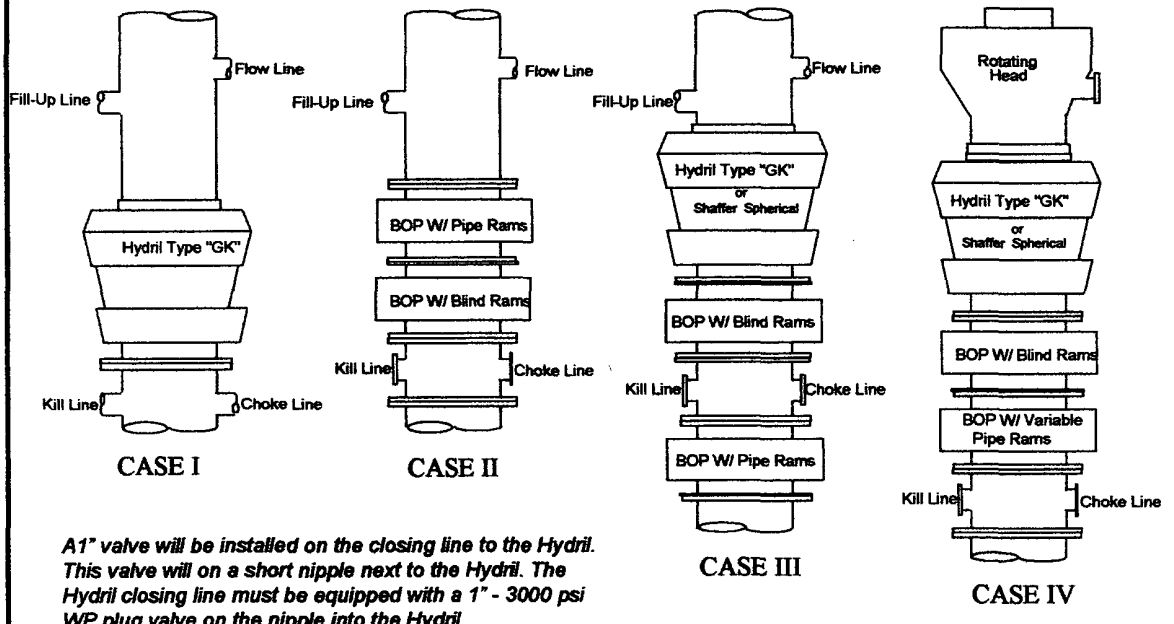
Nadel and Gussman Permian have evaluated this well and we do not expect to encounter hydrogen sulfide. However, we will employ a third party monitoring system. We will begin monitoring prior to drilling out the intermediate casing and will continue monitoring the remainder of the well.

Please contact me if you have any additional questions.

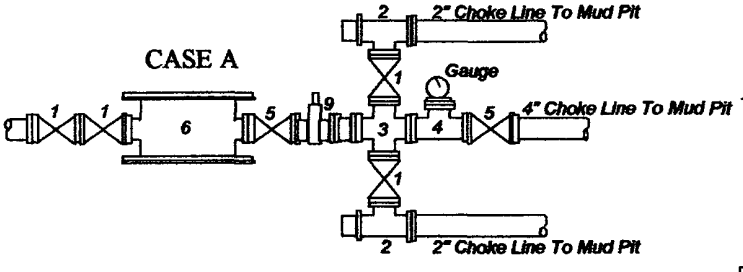
Sincerely,

Josh Fernau
Staff Engineer

# Nadel and Gussman Permian Big Chief Fee #6
# MINIMUM BLOWOUT PREVENTER REQUIREMENTS



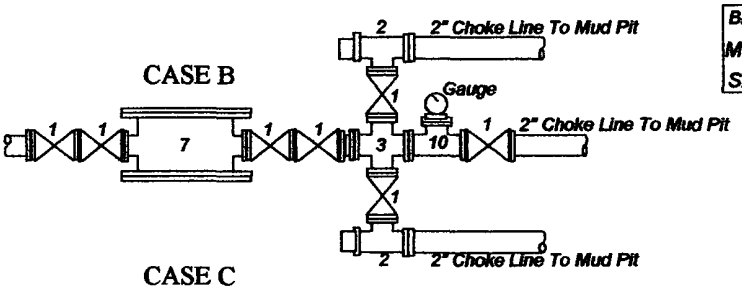

*A1" valve will be installed on the closing line to the Hydril. This valve will on a short nipple next to the Hydril. The Hydril closing line must be equipped with a 1" - 3000 psi WP plug valve on the nipple into the Hydril.*

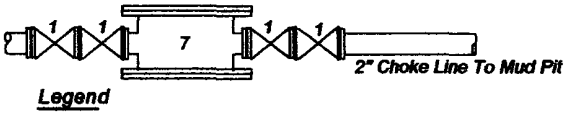



| BOP SIZE | BOP CASE | WORKING PRESSURE | CHOKE CASE |
|---|---|---|---|
| 13⅝" | III | 5,000# | A |
| 11" | II | 5,000# | A |

*Rotating head required

Bradenhead :
Mfr: _____
Size: _____ Type: _____




**Legend**

1. *2" flanged all steel valve must be either Cameron "F", Halliburton Low Torque or Shaffer Flo-Seal.*
2. *2" flanged adjustable chokes, min. 1" full opening & equiped with hard trim.*
3. *4" x 2" flanged steel cross.*
4. *4" flanged steel tee.*
5. *4" flanged all steel valve (Type as in no. 1).*
6. *Drilling Spool with 2" x 4" flanged outlet.*
7. *Drilling Spool with 2" x 2" flanged outlet.*
8. *2" x 2" flanged steel cross.*
9. *4" pressure operated gate valve.*
10. *2" flanged steel tee.*

**Notes**

*Choke manifold may be located in any convenient position. Use all steel fittings throughout. Make 90° turns with bull plugged tees only. No field welding will be permitted on any of the components of the choke manifold and related equipment upstream of the chokes. The choke spool and all lines and fittings must be at least equivalent to the test pressure of the preventers required. Independent closing control unit with clearly marked controls to be located on derrick floor near driller's position.*

*(10-31-96) WTXBOPS.PPT*

HORIZON
MUD COMPANY

# PROPOSED MUD PROGRAM

## CASING DESIGN

| | | | |
|---|---|---|---|
| 13 3/8" | Surface Casing | at | 400' |
| 9 5/8" | Intermediate Casing | at | 6,100' |
| 8 3/4" | Open Hole | to | 12,900' |

## RECOMMENDED MUD PROPERTIES

| DEPTH | MUD WEIGHT | VISCOSITY | FLUID LOSS |
|---|---|---|---|
| Spud | 8.6- 8.7 | 32-34 | No Control |
| 400' | 8.9- 9.2 | 32-34 | No Control |
| **Set 13 3/8" Surface Casing at 400'. Drill out with Brine Water.** | | | |
| 500' | 9.8-10.0 | 28-30 | No Control |
| 1,500' | 10.0-10.1 | 28-30 | No Control |
| 3,000' | 10.0-10.1 | 28-30 | No Control |
| 4,500' | 10.0-10.1 | 28-30 | No Control |
| 6,100' | 10.0-10.1 | 28-30 | No Control |
| **Set 9 5/8" Intermediate Casing at 6,100'. Drill out with Fresh Water.** | | | |
| 6,200' | 8.4- 8.5 | 28-29 | No Control |
| 7,000' | 8.4- 8.5 | 28-29 | No Control |
| 8,000' | 8.4- 8.5 | 28-29 | No Control |
| 9,000' | 8.4- 8.5 | 28-29 | No Control |
| 9,500' | 9.2- 9.4 | 28-29 | No Control |
| 10,000' | 9.4- 9.6 | 28-29 | No Control |

| | | | |
|---|---|---|---|
| 11,000' | 9.8- 10.0 | 32-34 | <12 |
| 11,400' | 10.0-12.0 | 32-34 | <12 |
| 11,800' | 10.0-12.0 | 45-50 | <12 |
| 12,300' | 10.0-12.0 | 45-50 | <12 |
| 12,900' | 10.0-12.0 | 45-50 | <12 |

## RECOMMENDED MUD PROGRAM BY CASING INTERVAL

**Surface Hole 0 – 400'**

Spud with a Horizon **Gel/Lime** slurry, mixing one **Lime** per ten **Gel** for a 32-34 viscosity. Lost circulation is common in this area. Should lost circulation occur and cannot be re-gained with one LCM pill, dry drill to total depth.

**Intermediate Hole 400'-6,100'**

Drill out from under the surface casing with brine water, circulating through the reserve pit to allow maximum time for settling drilled-solids.

Severe lost circulation is possible while drilling this interval. Seepage can be controlled with additions of **Paper**. Should complete loss of returns occur while drilling, we recommend pulling up above the loss zone to avoid differential sticking and spotting a 100-200 barrel pill containing 15-25 lb/bbl lost circulation material. Spot the pill from above at a reduced pump rate before returning to bottom to commence drilling operations. If lost circulation is not regained with one or two LCM pills, some blind drilling may be required. . If partial returns are maintained, use only brine for volume to avoid severe washouts.

Crooked hole can be a problem in this area.

Allow hole conditions to dictate the need for any additional viscosity or hole sweeps at total depth to clean the hole and insure smooth casing operations.

**Open Hole– 6,100'-12,900'**

Drill out from under the intermediate casing with fresh water, circulating through the outer reserve pit to, once again, allow maximum time for settling drilled-solids. A flocculent (**MF-1**) can be used to aid in dropping solids, providing a clear fluid and maximum penetration rates.

**We recommend that the surface pit system include the following:**

⇒ **Flo-line Cleaner** – This will allow removal of a wider range of solids and will assist in optimizing the efficiency of the de-sander and de-silter (or scale shaker).

HORIZON
MUD COMPANY

⇒ **Centrifuge**—This will allow for fine solids removal and barite recovery.

⇒ **Shale and settling pit by-pass Canal** – To reduce volumes when conditioning mud for DST's or added hole cleaning at total depth.

⇒ **Pit Volume Totalizers** – To more accurately monitor pit gains and losses.

⇒ **One 1000 sack Barite Bin**- For barite storage on location.

We recommend maintaining a 9.0 – 9.5 pH with **Caustic.**

As drilling progresses post **6,000'**, some loss of fluid should occur. Minor seepage can be controlled with additions of **Paper**. Complete lost circulation is also possible during this interval. Should complete loss of returns occur while drilling, we recommend following the same procedure described in the previous section.

Severe seepage in the **Delaware** and **Bone Springs** may require alternative methods of combating losses, such as:

⇒ **Heavy bentonite pills**

⇒ **Diesel/Loloss pills**

⇒ **Drill-out pills spotted or squeezed**

Crooked hole can also be a problem in this section past **8,000'**.

Utilize **Horizon Poly-Vis II** and Prehydrated **Gel** for periodic sweeps while drilling, prior to mud-up.

At a depth of **9,500' or the top of the Wolfcamp,** we recommend returning to the working pits and displacing with brine weighing **9.2 – 9.4 ppg**.

By **11,000' or the top of the Strawn**, we recommend displacing with brine and mudding-up with an **XC Polymer/MF-55** system to achieve the following properties:

| | |
|---|---|
| **Mud Weight** | **9.8–10.0** |
| **Viscosity** | **32 – 34** |
| **Fluid Loss** | **<12** |

It is also possible to encounter abnormal pressure in the **Atoka** formation. Drilling slightly under-balanced has proven successful at maximizing penetration rates, however, it may be necessary to increase the mud weight to **10.5 –12.0 ppg** to control formation pressure. It may be possible to avoid increasing the weigh of the entire system by spotting heavy pills on bottom for trips.

HORIZON
MUD COMPANY

If higher mud weights are required, **7" casing** may be necessary to cover the **Bone Springs** formation.

> **XCD Polymer** at higher concentrations has the unique ability to increase the "low-shear rate viscosity" of the fluid. This property has proven to minimize losses in the **Delaware** and **Bone Springs**. On two wells in the immediate area, this fluid has eliminated the need for **7" casing** while formation pressures required as high as an **11.8 ppg** mud weight to control.

We recommend adding **MF-55** to the system in this particular area to minimize potential sloughing shale. **MF-55** is a non-ionic emulsion polymer that will chemically tie up water. This "taking on of water" effect has proven to significantly minimize fluid invasion. **MF-55** also has the ability to inhibit through encapsulation, or coating of the wellbore.

Lost circulation could occur after mud-up. We recommend using fibrous-type **LCM** to control seepage. Should complete loss of returns occur, we recommend following the same procedure as described in the previous section.

## REDUCED FORMATION DAMAGE WITH XC POLYMER

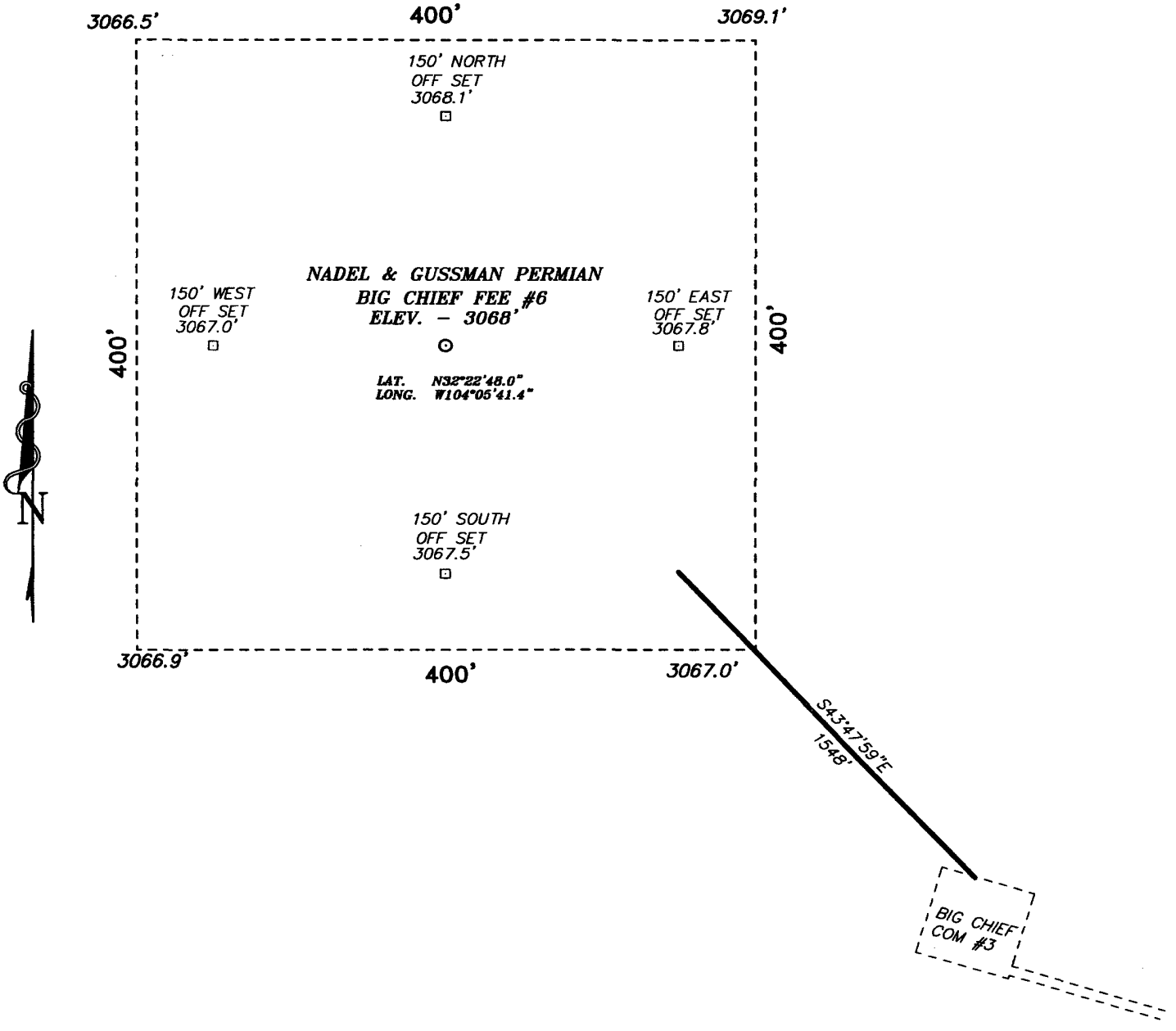
At **11,800' or the top of the Morrow**, we recommend increasing the concentration of **XC Polymer** to **1 3/4 to 2 ppb** to achieve low shear-rate viscosity **(LSRV)**. This concentration of **XC Polymer** is necessary to accomplish the networking effect of the polymers. It is this networking effect of the **Zanthan Gum** polymer that gives it its unique ability to increase the **LSRV**.

By achieving elevated viscosity in the low shear region of the flow profile, lateral penetration of fluid into the formation is reduced. This will minimize damage to the **Morrow** formation caused by the migration of clays once the kaolinite booklets have been broken. Also, an additional benefit of reaching this flow profile is that hole cleaning is maximized.

**LSRV** is monitored by measuring the gel strength and the relaxation time of the fluid. Minimum gel strength values of **40 – 60 (.2 spring)** and a relaxation measurement of **3 to 4 minutes** are essential to provide the proper flow profile. The "relaxation measurement" directly measures the LSRV of the fluid. The **Brookfield Rheometer** is also used in the field to correlate with the relaxation measurement.

This fluid, adjusted as shown in the **"RECOMMENDED MUD PROPERTIES"** section, or as hole conditions dictate, should provide good hole conditions for any testing, logging and casing operations.

# SECTION 21, TOWNSHIP 22 SOUTH, RANGE 28 EAST, N.M.P.M.,
**EDDY COUNTY,** **NEW MEXICO.**




Directions to Location:

FROM THE JUNCTION OF U.S. REFINERY ROAD AND EDDY CO. RD. #607 GO NORTEAST 0.9 MILES TO A LEASE ROAD, THENC WEST 0.1 MILES TO THE BIG CHIEF #3 AND PROPOSED ROAD.

**BASIN SURVEYS** P.O. BOX 1786 – HOBBS, NEW MEXICO

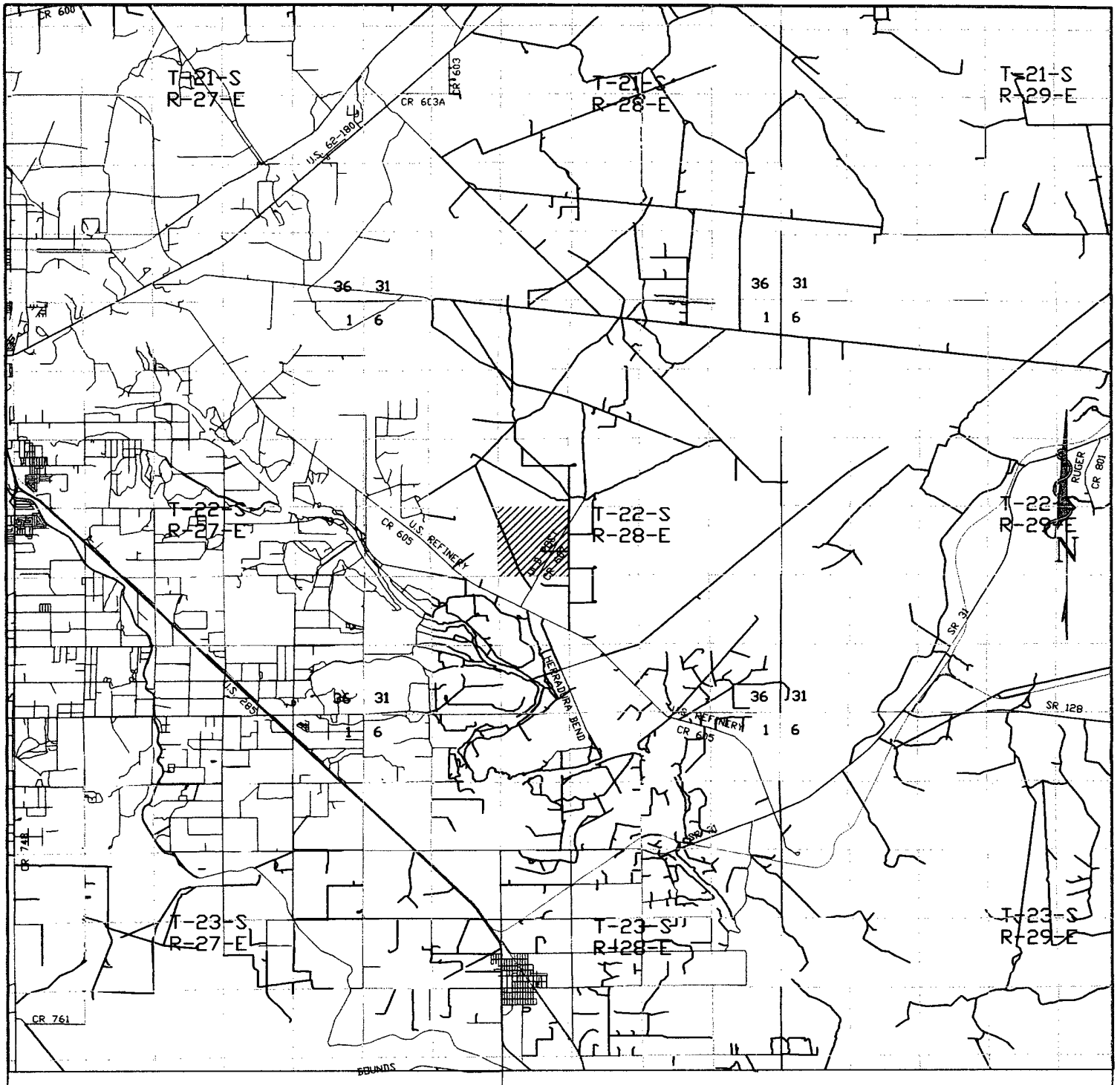
| | |
|---|---|
| W.O. Number: 4510 | Drawn By: JAMES PRESLEY |
| Date: 08/04/04 | Disk: JLP #1 – 4510A |

## NADEL AND GUSSMAN PERMIAN

REF: BIG CHIEF FEE #6 / Well Pad Topo

BIG CHIEF FEE #6 LOCATED 1980' FROM THE NORTH LINE AND 1980' FROM THE WEST LINE OF SECTION 21, TOWNSHIP 22 SOUTH, RANGE 28 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

| | |
|---|---|
| Survey Date: 08/03/04 | Sheet 1 of 1 Sheets |



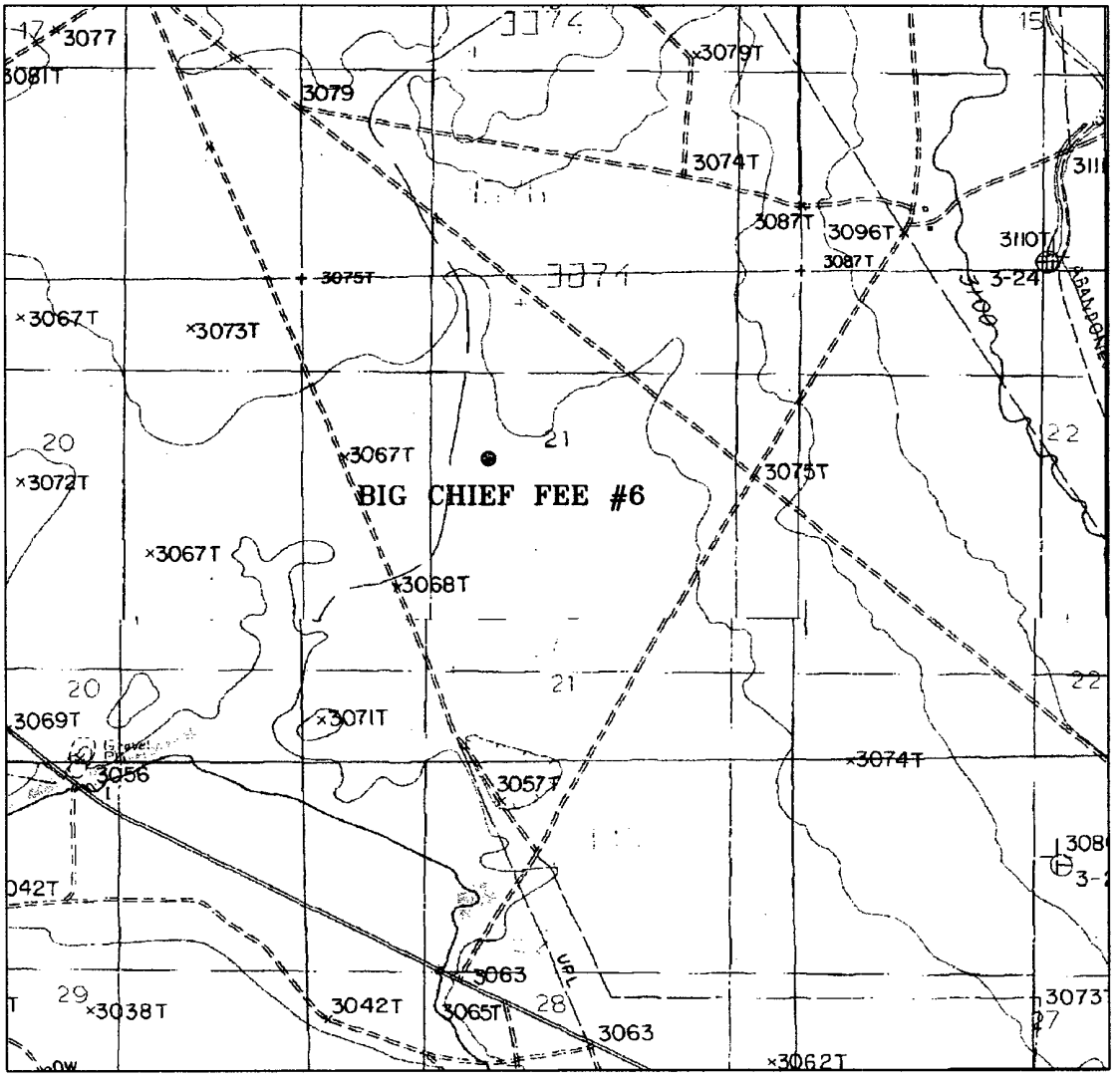

**BIG CHIEF FEE #6**
Located at 1980' FNL and 1980' FWL
Section 21, Township 22 South, Range 28 East,
N.M.P.M., Eddy County, New Mexico.


basin surveys
focused on excellence in the oilfield

P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(505) 393-7316 - Office
(505) 392-3074 - Fax
basinsurveys.com


| | |
|---|---|
| W.O. Number: | 4510AA - JLP #1 |
| Survey Date: | 08/03/04 |
| Scale: | 1" = 2000' |
| Date: | 08/04/04 |

**NADEL AND GUSSMAN PERMIAN, L.L.C.**




BIG CHIEF FEE #6
Located at 1980' FNL and 1980' FWL
Section 21, Township 22 South, Range 28 East,
N.M.P.M., Eddy County, New Mexico.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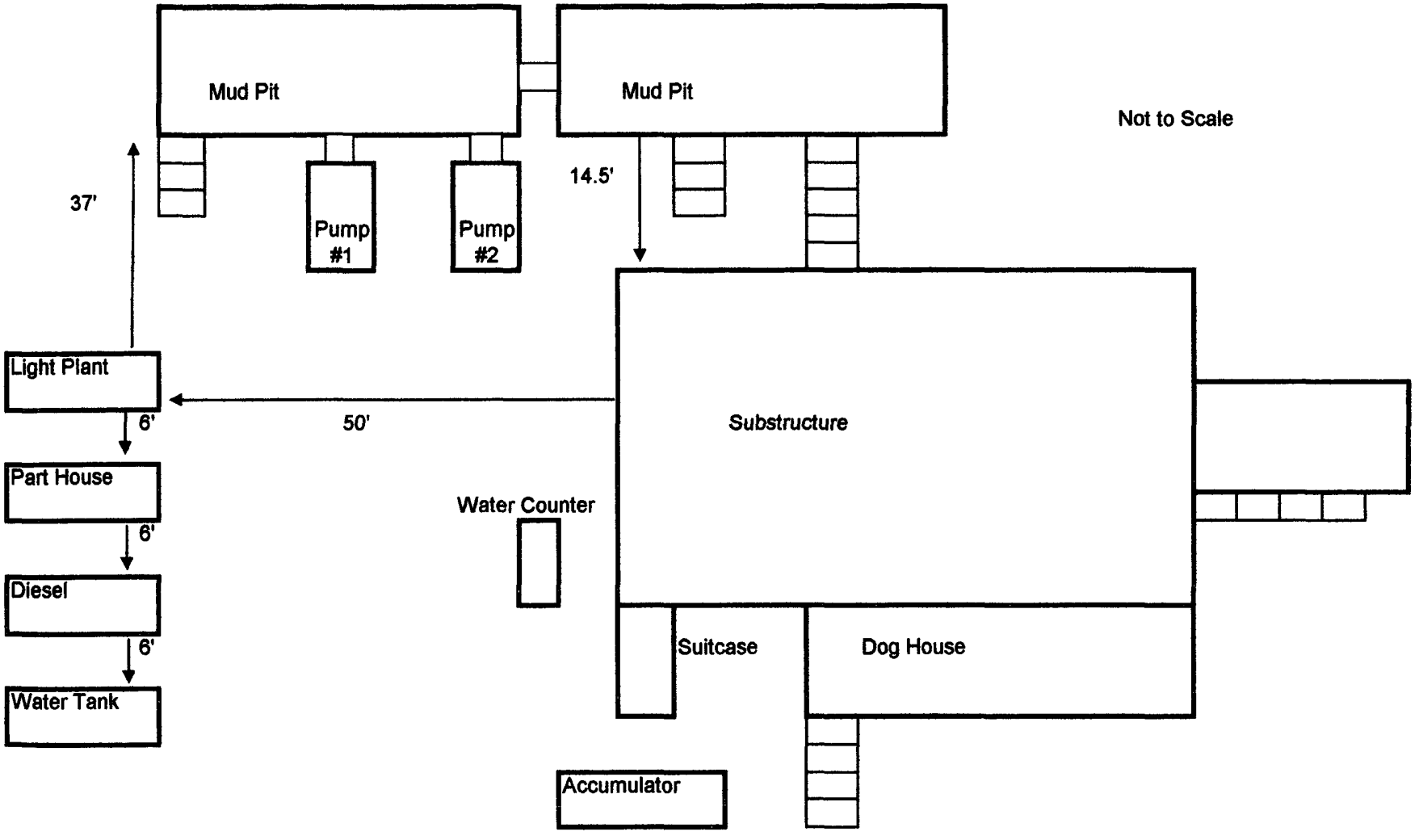
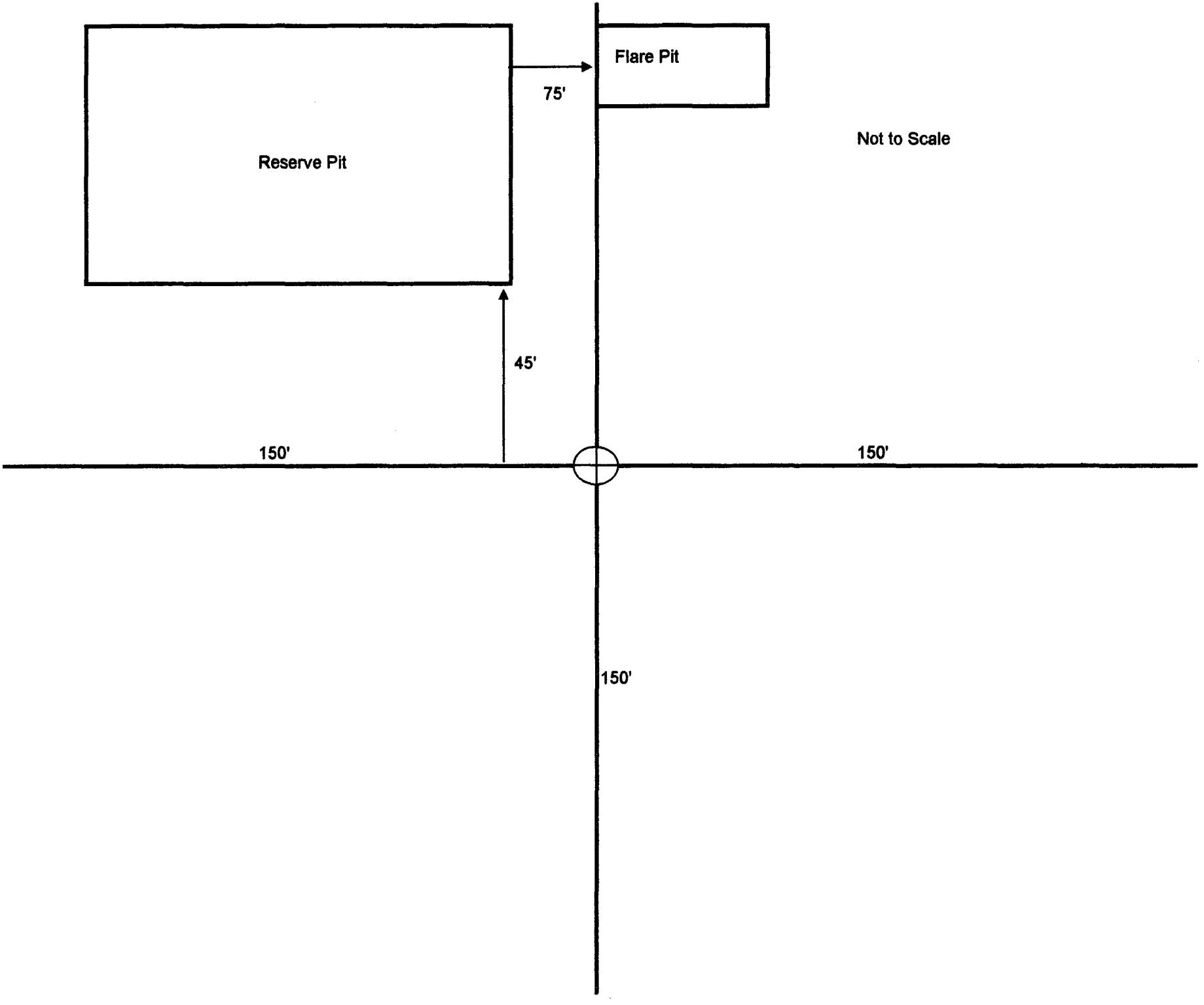
focused on excellence in the oilfield

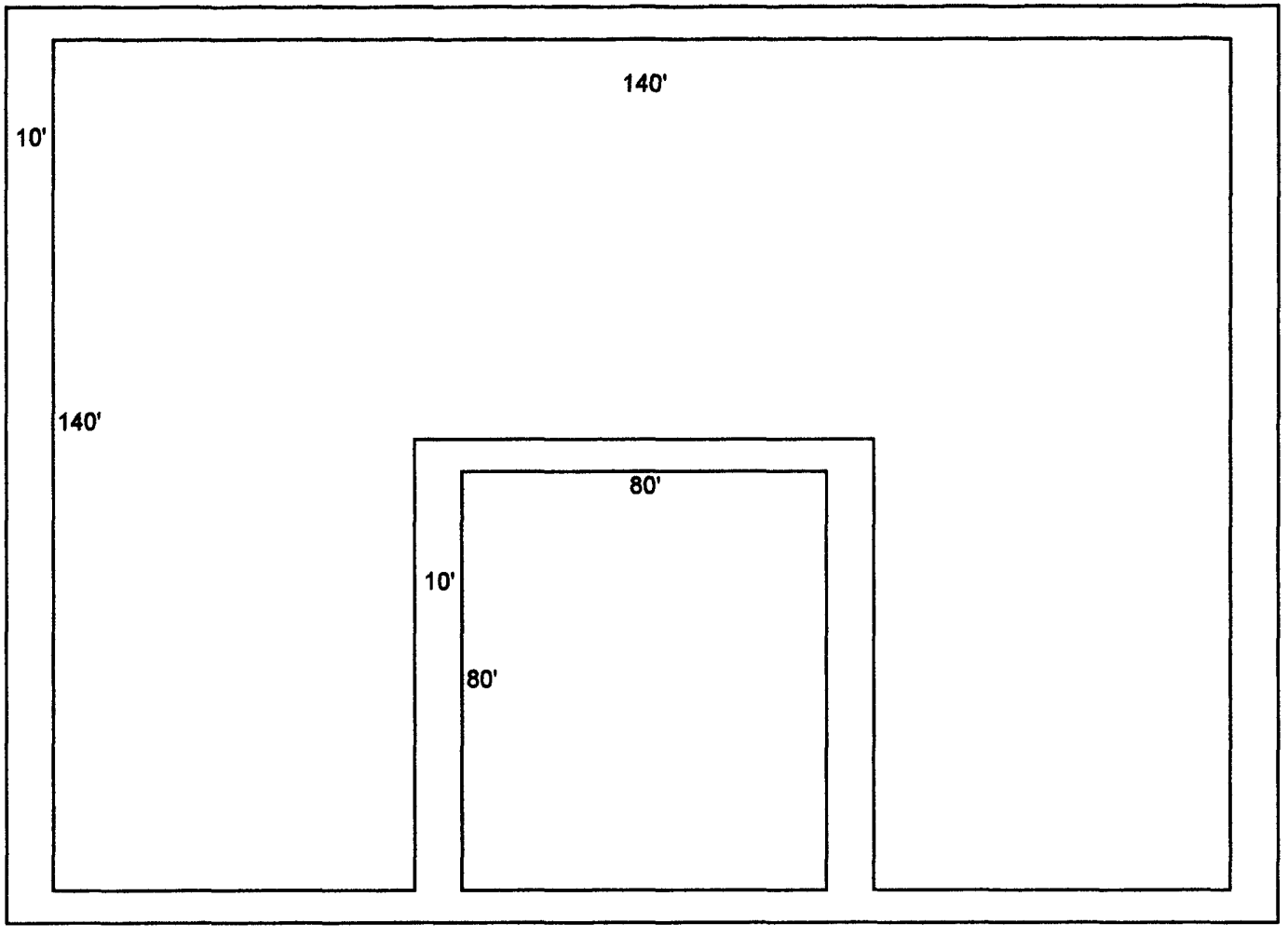
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(505) 393-7316 - Office
(505) 392-3074 - Fax
basinsurveys.com


| | |
|---|---|
| W.O. Number: | 4510AA - JLP #1 |
| Survey Date: | 08/03/04 |
| Scale: | 1" = 2000' |
| Date: | 08/04/04 |

**NADEL AND GUSSMAN PERMIAN, L.L.C.**


Mud Pit
Mud Pit
Not to Scale
37'
14.5'
Pump #1
Pump #2
Light Plant
6'
50'
Substructure
Part House
6'
Water Counter
Diesel
6'
Suitcase
Dog House
Water Tank
Accumulator


Flare Pit
75'
Reserve Pit
Not to Scale
45'
150'
150'
150'




Not to Scale