| DATE IN 9/26/07 | SUSPENSE 10/22/07 | ENGINEER W Jones | LOGGED IN 9/27/07 | TYPE SWD 1103 | APP NO. pTDS0727034352 |
|---|---|---|---|---|---|

10/6/07
1 stat Notice

ABOVE THIS LINE FOR DIVISION USE ONLY

**NEW MEXICO OIL CONSERVATION DIVISION**
- Engineering Bureau -
1220 South St. Francis Drive, Santa Fe, NM 87505

RECEIVED
2007 SEP 26 AM 11 27

# ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

**Application Acronyms:**

**[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]**
**[DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]**
**[PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]**
**[WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]**
**[SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]**
**[EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]**

[1] **TYPE OF APPLICATION** - Check Those Which Apply for [A]

[A] Location - Spacing Unit - Simultaneous Dedication
☐ NSL ☐ NSP ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery
☐ WFX ☐ PMX ☒ SWD ☐ IPI ☐ EOR ☐ PPR

[D] Other: Specify _____

[2] **NOTIFICATION REQUIRED TO:** - Check Those Which Apply, or ☐ Does Not Apply

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners

[B] ☒ Offset Operators, Leaseholders or Surface Owner

[C] ☒ Application is One Which Requires Published Legal Notice

[D] ☐ Notification and/or Concurrent Approval by BLM or SLO
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

[E] ☒ For all of the above, Proof of Notification or Publication is Attached, and/or,

[F] ☐ Waivers are Attached

[3] **SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.**

[4] **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

**Note: Statement must be completed by an individual with managerial and/or supervisory capacity.**

| Richard Mrlik | | Manager--High Plains Operating Company, LLC | 9/24/07 |
|---|---|---|---|
| Print or Type Name | Signature | Title | Date |

rmrlik@intertie.com
e-mail Address

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT

**Oil Conservation Division**
**1220 South St. Francis Dr.**
**Santa Fe, New Mexico 87505**

FORM C-108
Revised June 10, 2003

## APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: _____Secondary Recovery _____Pressure Maintenance ___XX___Disposal _____Storage
Application qualifies for administrative approval? ____XX____Yes _____No

II. OPERATOR: High Plains Operating Company, LLC

ADDRESS: 2130 Fillmore Street, #211 San Francisco, CA 94115

CONTACT PARTY: Richard Mrlik PHONE: 415-567-0446

III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? _____Yes ____XX____No
If yes, give the Division order number authorizing the project: _____

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review. SEE ATTACHED EXHIBIT.

VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail. SEE ATTACHED EXHIBIT.

VII. Attach data on the proposed operation, including: SEE ATTACHED EXHIBIT.

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval. SEE ATTACHED EXHIBIT.

IX. Describe the proposed stimulation program, if any. SEE ATTACHED EXHIBIT.

*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted). LOGS PREVIOUSLY FILED.

*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken. SEE ATTACHED EXHIBIT.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water. SEE ATTACHED EXHIBIT.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form. SEE ATTACHED EXHIBIT.

XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

NAME: Richard Mrlik TITLE: Manager, High Plains Operating Company, LLC

SIGNATURE: _____ DATE: September 24, 2007

E-MAIL ADDRESS: rmrlik@intertie.com

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: _____

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District Offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

(1) The name, address, phone number, and contact party for the applicant;

(2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;

(3) The formation name and depth with expected maximum injection rates and pressures; and,

(4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

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NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

Side 1

# INJECTION WELL DATA SHEET

OPERATOR: High Plains Operating Company, LLC (HPOC)

WELL NAME & NUMBER: Eagle Springs 8 Federal #1 API #: 30-043-20949

WELL LOCATION: 263′ FNL & 2545′ FEL of Section 8-T19N-R4W of the NMPM; Sandoval County, NM. See well location and acreage dedication plat that follows.

***WELLBORE SCHEMATIC***

See original Synergy wellbore schematic, HPOC current schematic and well log on following pages.

***WELL CONSTRUCTION DATA***

Surface Casing

Hole Size: 12 1/4″ Casing Size: 9 5/8″

Cemented with: 270 sks, circulated. *or* _____ ft$^3$

Top of Cement: Surface Method Determined: _____

Intermediate Casing—NONE SET

Hole Size: _____ Casing Size: _____

Cemented with: _____ *or* _____ ft$^3$

Top of Cement: _____ Method Determined: _____

Production Casing

Hole Size: 8 3/4″ Casing Size: 7″

Cemented with: 1085 sks *or* _____ ft$^3$

Top of Cement: 2400′ Method Determined: Bond log

Total Depth: 5740′

Injection Interval

Perforate Lower Entrada from 5668′ to 5712′

(Perforated or Open Hole; indicate which)

HPOC seeks approval to inject from 5600′ to plugged back total depth of 5725′. Current perforations are from 5668′ to 5712′, however HPOC may desire to perforate additional section below 5600′ in the future.

## INJECTION WELL DATA SHEET

Tubing Size: 2 7/8" Lining Material: Not lined. HPOC plans to conduct an extended 1-year production test from the Entrada zone at the Eagle Springs 8 Federal 2M ("Fed 2M"). The Fed 2M was deepened in July 07 using nitrogen (versus mud) as the drilling fluid and only the top 3 – 5 feet of the Entrada was penetrated. HPOC seeks to assess its novel completion technique by producing oil and water from the Fed 2M, separating the oil and water at the surface, and injecting the produced Entrada water back into the Fed 1. To reduce its upfront risk during the 1-year test period, HPOC requests a temporary variance of utilizing lined tubing for injecting into the Eagle Springs 8 Federal 1.

Type of Packer: 7" Arrowset 1 Retrievable Casing Packer

Packer Setting Depth: 5579'

Other Type of Tubing/Casing Seal (if applicable): n/a

Additional Data

1. Is this a new well drilled for injection? _____Yes __XX__No

   If no, for what purpose was the well originally drilled?

   The well was originally drilled and completed as an oil well producing from perforations in the top of the Entrada sandstone.

2. Name of the Injection Formation: Lower Entrada

3. Name of Field or Pool (if applicable): Arena Blanca Entrada Southeast (96899)

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used.

   Entrada originally produced in this well from perforations at 5534' to 5547'. Plugged on 11/22/2005 (Plug #1A from 5400' to 5547') with 11.5 bbls cement.

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area:

   The top of the Entrada (see #4 above for perfs) did produce in this wellbore, and will be produced in the offset Eagle Springs 8 Federal #2M well.

# INJECTION WELL DATA SHEET

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

DISTRICT II
1301 W. Grand Ave., Artesia, N.M. 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, N.M. 87410

DISTRICT IV
1220 South St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised October 12, 2005
Submit to Appropriate District Office
State Lease – 4 Copies
Fee Lease – 3 Copies

☐ AMENDED REPORT

## WELL LOCATION AND ACREAGE DEDICATION PLAT

| 1 API Number | 2 Pool Code | 3 Pool Name |
|---|---|---|
| 30-043-20949 | 96899 | ARENA BLANCA ENTRADA, SOUTHEAST |

| 4 Property Code | 5 Property Name | 6 Well Number |
|---|---|---|
| 25148 | EAGLE SPRINGS 8 FEDERAL | 1 |

| 7 OGRID No. | 8 Operator Name | 9 Elevation |
|---|---|---|
| 246238 | HIGH PLAINS OPERATING, LLC | 6717' |

### 10 Surface Location

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| B | 8 | 19-N | 4-W | | 263 | NORTH | 2545 | EAST | SANDOVAL |

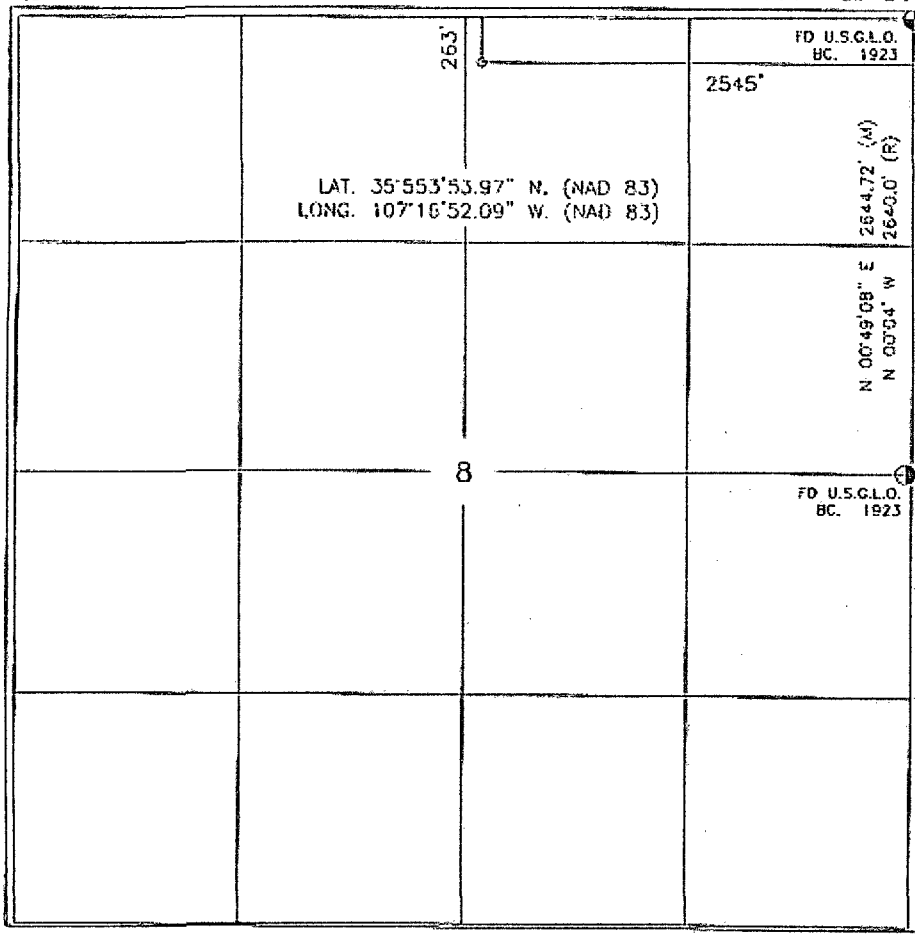
### 11 Bottom Hole Location If Different From Surface

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

| 12 Dedicated Acres | 13 Joint or Infill | 14 Consolidation Code | 15 Order No. |
|---|---|---|---|
| 160 | | | R-11331<br>R-11374 |

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

16




### 17 OPERATOR CERTIFICATION

*I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.*

Signature — Date: 1-24-07

RICHARD MRLIK
Printed Name

### 18 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 supervision, and that the same is true and correct to the best of my belief.*

SEPTEMBER 2006
Date of Survey

Signature and Seal of Professional Surveyor

ROY A. RUSH
NEW MEXICO
8894
01-2007
REGISTERED PROFESSIONAL LAND SURVEYOR

Certificate Number

# INJECTION WELL DATA SHEET

**Synergy Wellbore Schematic**

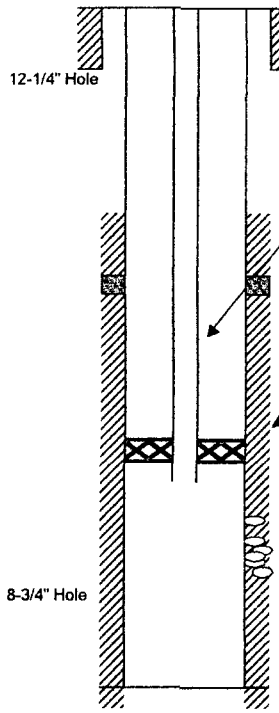
**Eagle Springs "8" Federal # 1**
Unit B, Section 08-T19N-R04W
263' FNL, 2548' FEL
6717' GL, 12' KB

Key Rig # 43
BHWS # 2

ES Federal # 1 - WBD
Spud: 12/11/99
Completed: 03/08/00

Lease # NMNM-99705

**API # 030-043-2094900**




**9-5/8" 36# J-55 Casing @ 400' w/ 270 sxs (351 ft3)**
**Circulated 27 bbls cement to surface**

TOC from 2nd Stage Cement Job @ 2428' per GR-USI log

**2-7/8" 6.5# J-55 EUE Tubing set @ 5400' (169 Jts)**

DV Tool @ 3103' (WL Depth)

(12.00') KB Depth
(32.53') 2-7/8" 6.5# J-55 Tubing Jt
(12.25) 2-7/8" 6.5# N-80 Pup Jts (2' and 10')
(5341.20') 2-7/8" 6.5# EUE tubing - 168 Jts
Above PKR the following: (0.90') Locator Seal fir 80-32 "EBH-22" anchor tubing assembly
**7" Baker Model 84-32 DB Permanent Production Packer @ 5400' (Wireline Depth) (3.9')**
Below PKR the following: (6.25') 4-1/2" STC pup jt
(0.35') 4-1/2" STC pin x 2-7/8" EUE pin Cross over
(2.10') 2-7/8" 6.5# EUE pup jt
(1.12') 2.31" Baker BX Nipple
(8.05') 2-7/8" 6.5# EUE pup jt
(1.12') 2.31" Baker BXN Nipple
**EOT @ 5423'** (0.67') 2-7/8" wireline Re-entry

**Todilto and Entrada Perforations**
*--Future Todilto Perforations 5510' to 5534' (14') - 80 holes - 56 SPF*
Perfs 5534' to 5539' (5') - 75 holes - 15 SPF - Todilto
Perfs 5542' to 5547' (5') - 75 holes - 15 SPF - Entrada
*--Future Perforations 5547' to 5735' (14') - 80 holes - 56 SPF*

PBTD @ 5686'
TD @ 5740'

**7" 23# L-80 Casing. Set at 5740'**
1st Stage Cement w/ 481 sxs (976 ft3) Lead Cement 960 psi lift pressure, Circ 10 bbls good cement
2nd Stage Cement w/ 604 sxs (1226 ft3) Cement. Lost Circ 80 bbls in of 122 bbls displacement

| Formation Tops | |
|---|---|
| Pict Cliffs | 420' |
| Lewis | |
| Cliffhouse | 849' |
| Menefee | 1556' |
| Pt. Lookout | 2338' |
| Mancos | 2485' |
| Gallup | |
| Greenhorn | 4320' |
| Graneros | 4397' |
| Dakota | 4564' |
| Morrison | 4768' |
| Todilto | 5510' |
| Entrada | 5542' |
| Carmel | 5735' |
| TD | 5740' |

Formation Name: **Todilto/Entrada**

02-27-2000 MIRU Completion Unit. NU BOP. GIH w/ 6-1/8" Bit & Six (6) 3-1/2" DCs. Tag cmt at 3018'. Bit plugged w/ LCM. COOH. unplug bit & BS. DO cmt from 3028' to 3105'. Circ Clean. Test Csg to 1000#. Good. GIH. Tag at 5637'. DO to FC @ 5686'. COOH. TIH w/ casing scraper. COOH.
03-02-2000 RU Schlumberger. Run cased hole GR-USI log. Bond across zones of interest. COOH.
03-03-2000 GIH OE. Pickle tubing w/ 500 gals 15% HCl. Displace hole w/ diesel. LD 12 jts. Swab well to 450'. COOH.
03-05-2000 Schlumberger run Gyro Survey. Perf Todilto Limestone (to avoid water coning) from 5534' to 5539' (5') - 75 holes. Fluid level same. GIH Model R PKR. Set at 5408'. Load backside w/ diesel & press test backside to 200#. Swab well.
03-07-2000 RU Schlumberger. Perforate Entrada Sandstone from 5542' to 5547' (5') - 75 holes. No change Fluid Level. GIH w/ Model R PKR. Set at 5408'. Swab well. Recover all diesel and formation oil. Swab in 600' entry per hour of formation oil. No show of water. SITP 160#. Blowdown. COOH.
Run Production tubing as follows. 1 Jt BP Mud Anchor, 4' Perf Sub, SN, 126 Jts (127 Jts) Total + 14' KB. EOT at 4046.18', SN @ 4010.63'
Pump Run (2.25" x 2" x 16' RWBC pump, 159 7/8" steel rods & polish rod.
03-14-2000 Pump 189 bbls New Oil, Zero Water. RD Rig.
03-16-2000 MIRU Welltech unit. POOH w/ rods & pump. RIH w/ 2.25" x 1.25" x 16' pump. Space out same rods.
03-17-2000 Pump 123 Bbls Oil, Zero Water.
04-05-2000 Shoot FL, found at 1586' in depth. NMOCD hearing to increase allowable.
09-14-2000 MIRU Pulling Unit. POH w/ rods & pump. RIH w/ 2.25" x 2" x 16' pump and same rods. Hang On.
09-15-2000 Pump 114 BO, 52 BW
09-18-2000 Pump 119 BO, 186 BW. Water Breakthrough.
10-26-2000 Pump 100 BO, 168 BW, Shoot FL found at 123 jts or 3912'
03-27-2001 MIRU Triple P Well Service. Unseat pump. LD 56 7/8" rods. ND WH. NU BOP. COOH w/ 2-7/8" tubing. LD perf sub. GIH w/ 2-7/8" x 2.25" x 22' Tubing Pump bbl and 166 Jts 2-7/8" tubing. Land at 5316.77' KB. Run Rods as follows:
2.25" x 5' plunger, 2' 3/4" pony, 2 - 7/8" steel rods, 1 - 7/8" 26K shear tool, 100 - 7/8" rods, 72 - 1" Fiberglass rods, 2' 7/8" pony & PR
04-10-2001 Pumping 30 BO, 263 BW.
04-30-2001 Pumping same 25 BOPD, 258 BWPD.
05-02-2001 FL shot, at 86 Jts or 2745'
08-01-2003 MIRU BHWS # 2. COOH w/ rods laying down. ND WH. NU BOPE. COOH, Pulling wet. Swab oil off top. COOH. Rig Repair. RU Blue Jet Wireline. RIH w/ gauge ring to 5670', Perfs from 5534' to 5547'. POOH.
RIH and set Baker Model DB Permanent Production PKR w/ exstensions. PKR set at 5400'.
RIH w/ Model EBH-22 Seal Assembly on 2-7/8" tubing. Mix inhibitor and roll hole to place fluid.
Land 169 Jts - 2-7/8" 6.5# J-55 tubing at 5400', in PKR.
ND BOPE. Swap out hanger to ensure seal on PKR test. PT Casing to 500#, for 30 mins good test.
10-28-2003 MIRU BJ Services. PT lines to 5000#. Perform Breakdown of Todilito/Entrada Perfs w/ 750 gals 15% HCl acid.
Peform Step Rate Test for Injection permiting. Pump 0.5 BPM at 650#, 1.0 @ 72#, 1.5 @ 885#, 1.75 @ 1030#
2.0 @ 1090# (2880 BWPD), 3.0 @ 1200#, 3.5 @ 1530#. ISIP Zero Vaccum.
03-23-2004 Perform MIT w/ NMOCD for permit to inject. Note Bradenhead w/ 280#? Pressure. 500# test failed. MIT failed
03-29-2004 NMOCD Letter to keep well shut-in and deny injection.
07-01-2005 Letter requesting shut-in exstension, with Gas Sample tests, Approved for 90 day extension until Oct 1st.
10-05-2005 BLM response requiring decision by October 31st, 2005.

Specialty Logs, Misc
Mud Log (400'-TD)
DST # 1 (5532'-5538')

Open Hole Logs (HES)
GR-Ind-Neu-Dens-Sonic (5744'-Surf) 12-23-99
GR-MRI log (5450'-5650', 3266'-3272') 12-23-99

Cased Hole Logs (Schlumberger)
GR-USI (2000'-5686') 03-01-00

January 24, 2004
Updated 10-31-05

# INJECTION WELL DATA SHEET

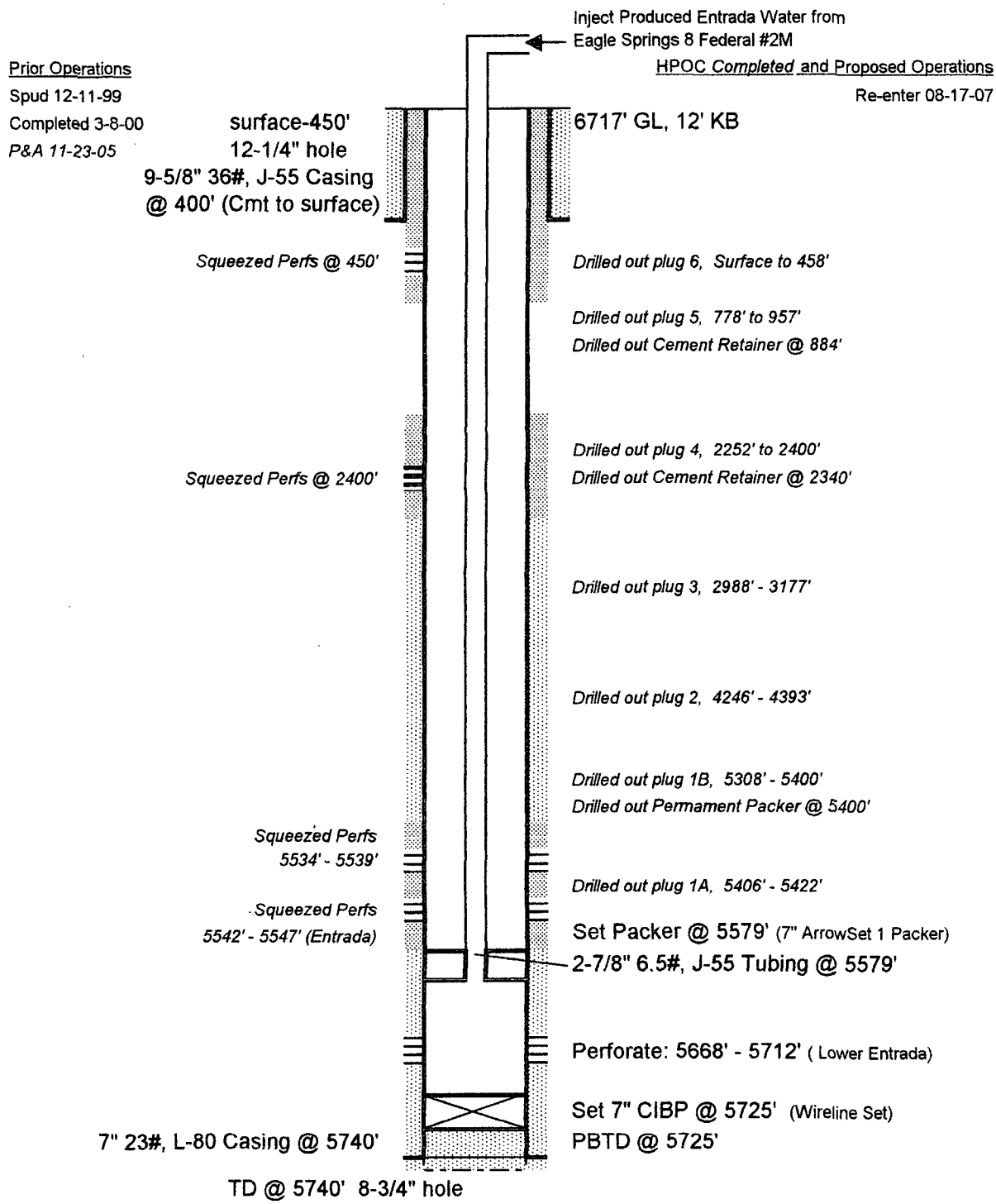
## *Current HPOC Wellbore Schematic*

## Eagle Springs "8" Federal #1

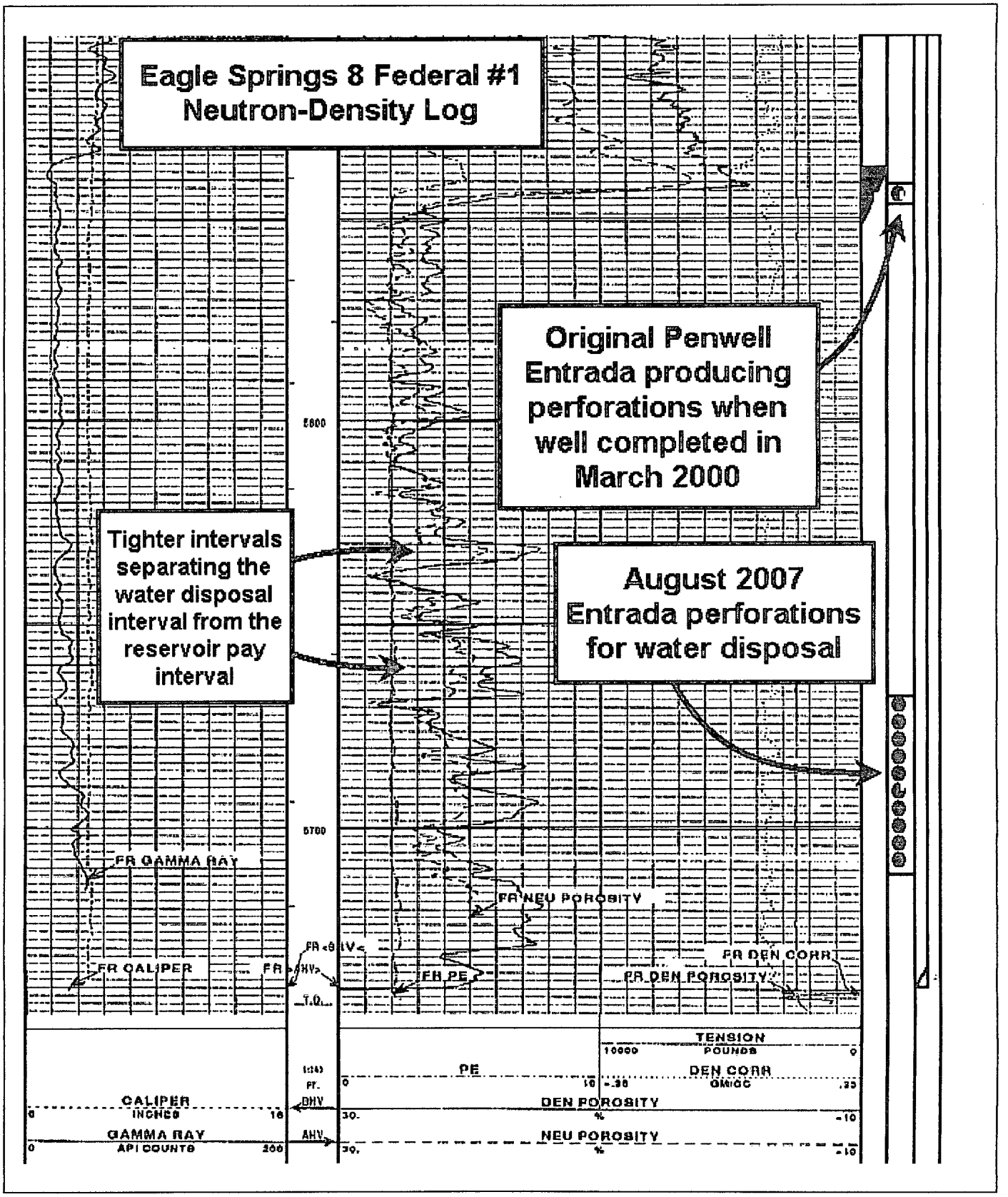
263' FNL, 2548' FEL, Sandoval County, NM

Well Schematic for Water Injection in Lower Entrada (5668' - 5712')

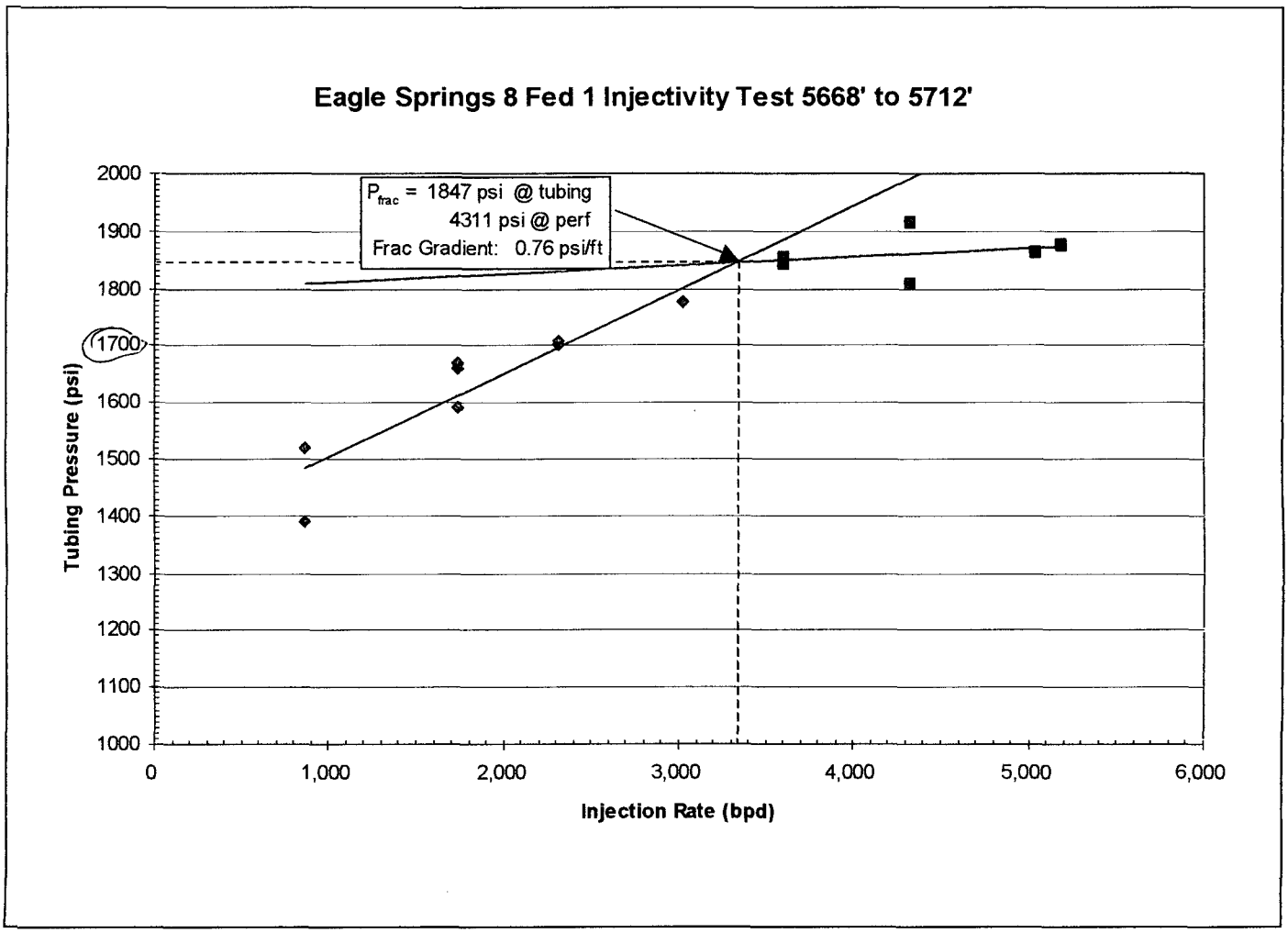
1 Year Extended Test



# INJECTION WELL DATA SHEET

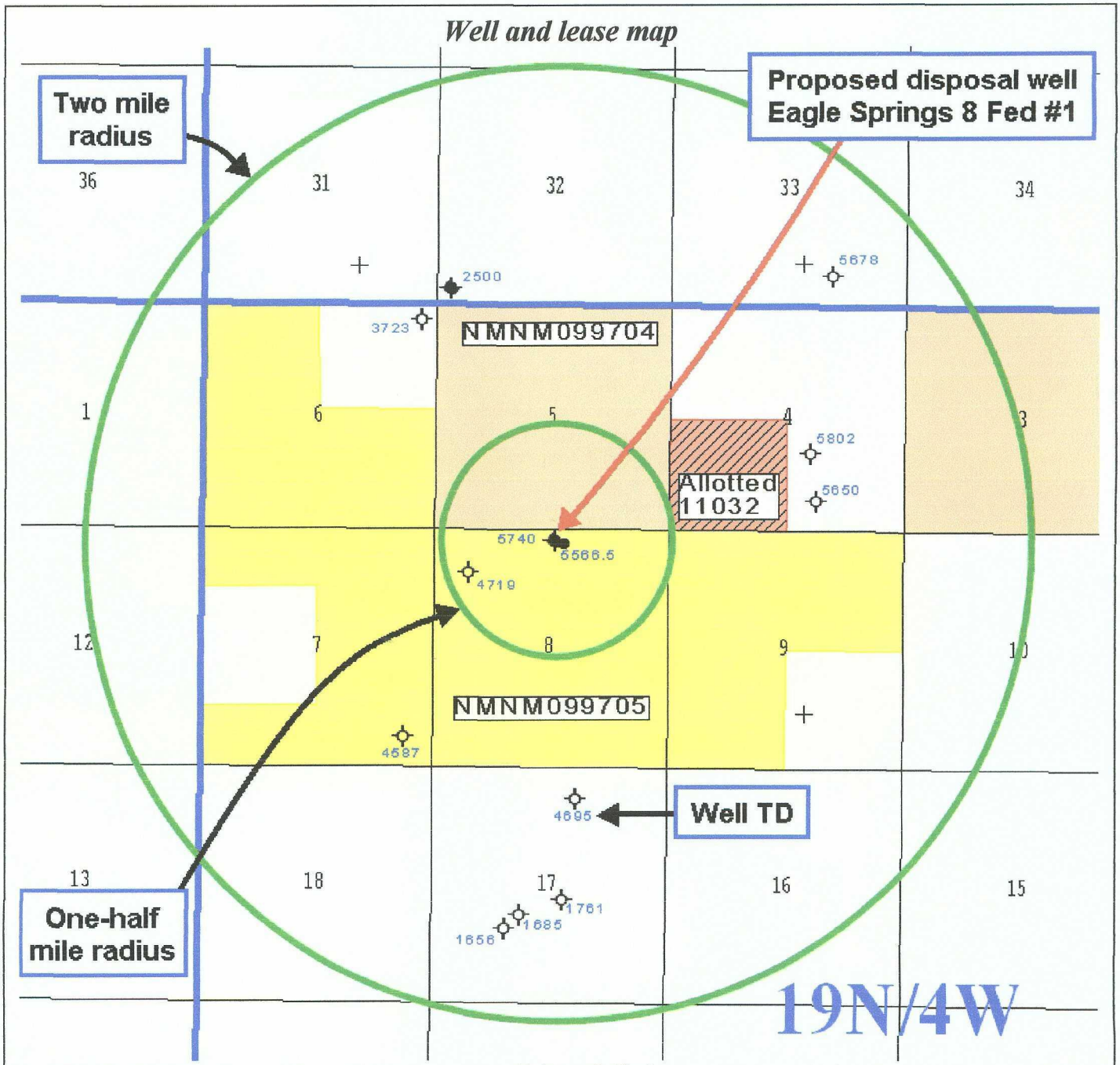


# INJECTION WELL DATA SHEET



**EXHIBITS TO ACCOMPANY**
**APPLICATION FOR AUTHORIZATION TO INJECT, SECTION V.**

*Well and lease map*




***High Plains Operating Company, LLC (HPOC) has re-entered the Eagle Springs 8 Federal #1 well and is ready to complete as a salt-water disposal well. Approximately 300′ to the east, HPOC deepened the Eagle Springs 8 Federal #2M from 3850′ to 5566.6′ and has completed this well as an Entrada Producer. HPOC plans to produce from the #2M well and dispose of the produced water into the #1 well. High Plains is the lessee of Federal leases NM\NM99705 and NM\NM99704.***

## *Well Data, Entrada Penetration within Area of Review*

**Well Name:**
Eagle Springs 8 Federal #2M

**API Number:**
30-043-20950

**Well Type:**
Oil

**Date Drilled:**
Originally drilled in January 2001 to 3850'. Deepened in June of 2007 to 5566.5' in the Entrada.

**Well Location:**
330' FNL & 2275' FEL of section 8-T19N-R4W of the NMPM, Sandoval County, NM

**Well Depth:**
5566.5'

**Well Completion Record:**
Entrada open hole completion in August 2007 from 5556' to 5566.5'. No stimulation.
Swabbed 22 barrels of oil and 119 barrels of water per day.

**Construction/Casing and Liner Record**

| Hole Size | Size/Grade | Wt (lb/ft) | Tops-Base | Stage Cementer Depth | No. of Sks & Type of Cement |
|---|---|---|---|---|---|
| 12 1/4" | 9 5/8"/J-55 | 36 | 0-353 | n/a | 250 sks |
| 8 3/4" | 7"/J-55 | 23 | 0-3850 | 3215' | 75 sks & 280 sks |
| 6 1/4" | 4 1/2"/J-55 | 10.5 | 3080-5519 | n/a | 360 sks clss "G" |

**Narrative:**
The Eagle Springs 8 Federal #2M was originally drilled by Penwell Energy in January of 2001 to a total depth of 3850' to test the Mancos/Gallup interval. A completion report was filed dated May 24, 2001 indicating potential of 17 barrels of oil and 10 barrels of water from the "Gallup Siltstone" perforated from 3200' to 3275'. Reported total cumulative production in May and June of 2001 for this well was 185 barrels of oil. Effective January 1, 2003, Synergy Operating took over as operator and in August of 2003 set a bridge plug at 3150' over the Mancos/Gallup perforations to move uphole and test the "Menefee Coals." Synergy perforated over a gross interval from 2250' to 2342' and from 2152' to 2168', fracture stimulated both intervals and recovered 100% water. These Menefee zones never produced any reported quantities of hydrocarbons and the well was eventually plugged in November of 2005. High Plains Operating Company, LLC filed an APD with the BLM in early 2007 and deepened this well to a total depth of 5566.5' in the Entrada.

# EXHIBITS TO ACCOMPANY

# APPLICATION FOR AUTHORIZATION TO INJECT, SECTION VI.

## *Well Data, Entrada Penetration within Area of Review*

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

DISTRICT II
1301 W. Grand Ave., Artesia, N.M. 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, N.M. 87410

DISTRICT IV
1220 South St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised October 12, 2005
Submit to Appropriate District Office
State Lease – 4 Copies
Fee Lease – 3 Copies

☐ AMENDED REPORT

### WELL LOCATION AND ACREAGE DEDICATION PLAT

| 1 API Number | 2 Pool Code | 3 Pool Name |
|---|---|---|
| 30-043-20950 | 96899 | AREA BLANCA ENTRADA, SOUTHEAST |

| 4 Property Code | 5 Property Name | 6 Well Number |
|---|---|---|
| 25146 | EAGLE SPRINGS 8 FEDERAL | 2M |

| 7 OGRID No. | 8 Operator Name | 9 Elevation |
|---|---|---|
| 245238 | HIGH PLAINS OPERATING COMPANY, LLC | 6720' |

### 10 Surface Location

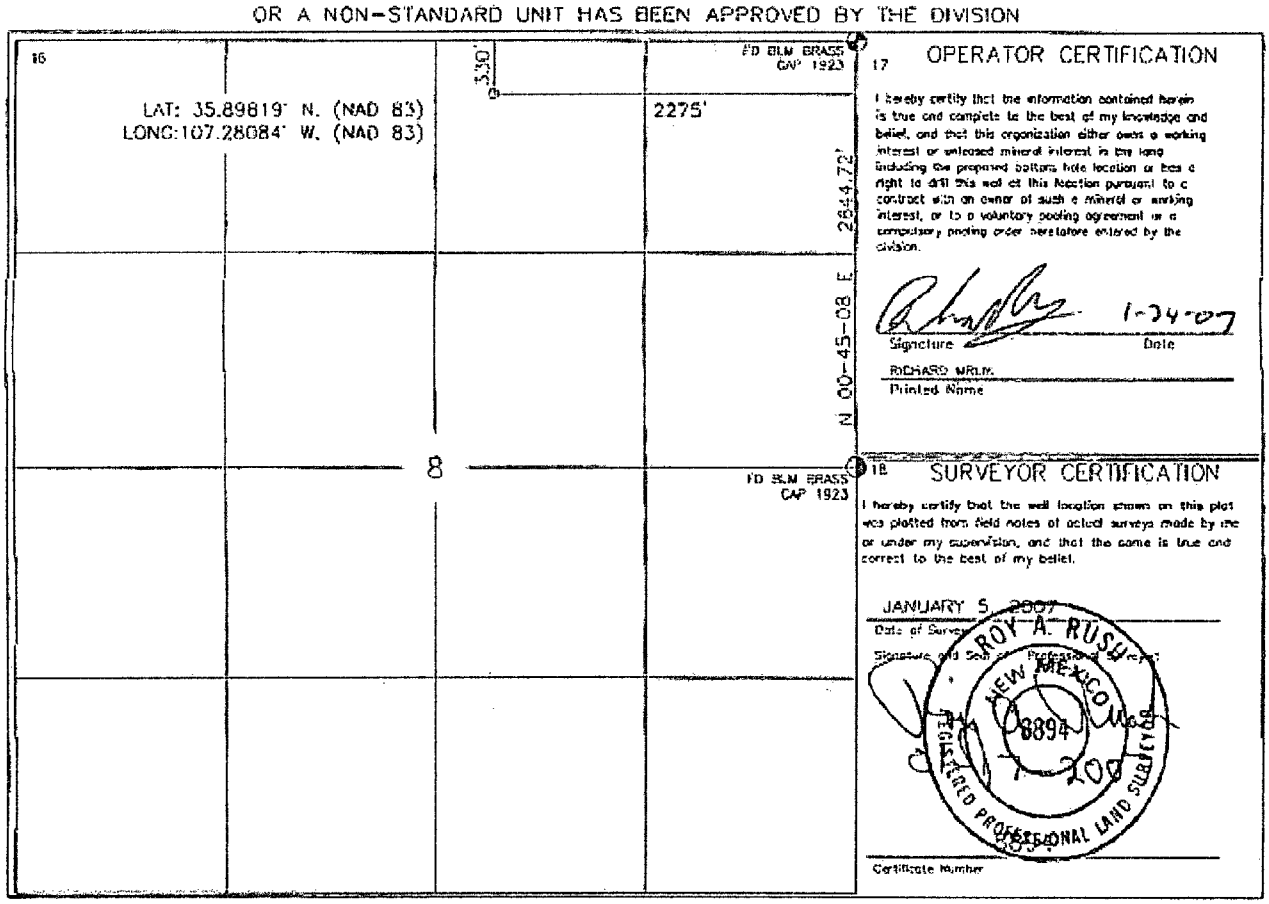
| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| B | 8 | 19-N | 4-W | | 330 | NORTH | 2275 | EAST | SANDOVAL |

### 11 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 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

| 12 Dedicated Acres | 13 Joint or Infill | 14 Consolidation Code | 15 Order No. |
|---|---|---|---|
| | | | |

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




17 OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

1-24-07
Signature Date

RICHARD MRLIK
Printed Name

18 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 supervision, and that the same is true and correct to the best of my belief.

JANUARY 5, 2007
Date of Survey

Signature and Seal of Professional Surveyor

ROY A. RUSH
NEW MEXICO
8894
REGISTERED PROFESSIONAL LAND SURVEYOR

Certificate Number

# EXHIBITS TO ACCOMPANY
# APPLICATION FOR AUTHORIZATION TO INJECT, SECTION VI.

## *Well Data, Entrada Penetration within Area of Review*
## *Synergy Wellbore Schematic*

ES Federal # 2M - WBD

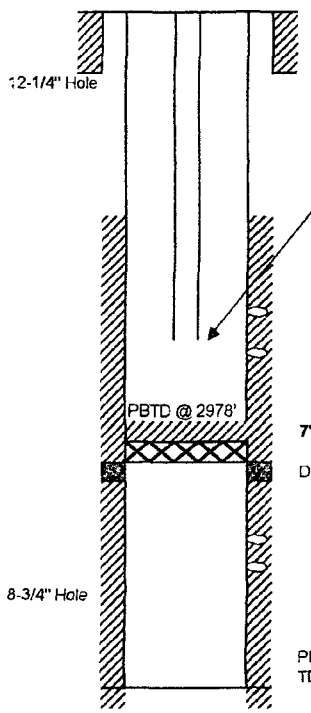
**Eagle Springs "8" Federal # 2M**
Unit B, Section 08-T19N-R04W
330' FNL, 2310' FEL
6737' GL, 13' KB

Bear Cat # 3
BHWS # 2

Spud: 01/16/2001
Completed: 03/23/01

Lease # NMNM-99705

**API # 030-043-2095000**




**9-5/8" 36# J-55 Casing @ 353' w/ 250 sxs**
**Circulated 114 sxs cement to surface**

***7/8" Rod String and DH pump in the well.***

**2-7/8" 6.5# J-55 EUE Tubing set @ 2540' (78 Jts)**

**Calculated 7" TOC following Sqz Job at 1400' (base on lift pressure)**

**Menefee**
2154' to 2168' (14') (Stg # 2)
Fracture Stimulated with 23,000# 20/40 Super DC in 14,322 gals 25# X-Linked Gel
2250' to 2254' (4'), 2261'-2263' (2'), 2282'-2284' (2'), 2306'-2308' (2'), 2339'-2342' (4') - (Stg # 1)
Fracture Stimulated with 7,100# 20/40 Super DC in 10,080 gals 25# X-Linked Gel

**4 - sqz holes at 2308'.** Original TOC 7" 2nd Stage at 2310'
**7" CIBP @ 3150' (2 sxs Cement Dump bailed on top)**

DV Tool @ 3215' (WL Depth)

**Mancos**
*3200' to 3270' - 30 holes*
Fracture Stimulated w/ 54,917 gals gelled diesel & 47,500# 12/20 Brady & 6,250# 40/70 Arizona

PBTD @ 2978'
TD @ 3650'

**7" 23# J-55 Casing. Set at 3850'**
1st Stage Cement w/ 75 sxs ( 128 ft3) Lead Cement. Set ECP. Circ 26 sxs to surface.
2nd Stage Cement w/ 280 sxs Lead (557 ft3) Cement, Tail w/ 105 sxs (125 ft3). Lost 90% of returns w/ 6 bbls left on final displacement

| Formation Tops | |
|---|---|
| Pict Cliffs | 400' |
| Lewis | |
| Cliffhouse | 860' |
| Menefee | 1425' |
| Pt. Lookout | 2205' |
| Mancos | 2470' |
| Gallup | 3270' |
| TD | 3850' |

Formation Name: **Mancos**
03-10-2001 MIRU Completion Rig. PU 6-1/2" Mill tooth Bit & scraper, & 3 - 3-1/2" DCs on 2-7/8" tubing. GIH tag at 3195'. DO DV tool. Work Scraper through also. Test to 1000#. Good test. GIH to PBTD of 3765'. LD 7 Jts.
03-13-2001 RU Schlumberger. Run GR USIT after problems. Listed on daily that TOC was at 200' WRONG.
GIH openended. Roll hole clean w/ diesel. Run Gyro Survey.
Perforate Mancos from 3270' to 3275' (5') - 6 holes, 3250'-3256' (6') - 7 holes, 3234' to 3238' (4') - 5 holes, 3220'-3224' (4') - 5 holes, and 3200'-3206' (6') - 7 holes. Total of 30 holes. No Change in Fluid Level
03-16-2001 GIH w/ RTTS and RBP. Lost RBP. Fell to PBTD. LD RTTS. GIH w/ retreiving head. Recover RBP. GIH w/ same RTTS, set PKR at 3147'. RU HES. BD perfs w/ diesel at 934#. Ball out to 4468#. ISIP 428#. Good ball action 46 bbls diesel to recover. RU to swab. Swab well back. Recover 100% water on 3rd run. Release PKR. Load 12,487 gallons diesel for Frac.
Fracture Stimulate Mancos Perforations (Gallup) w/ 54,917 gallons My-T-Oil IV gelled diesel carrying 47,500# 12/20 Brady & 6,250# 40/70 Arizona
Traced Stimulation. ISIP 416#, No rates listed. 17 Hr - SICP 50#. Blow down.
03-20-2001 RIH w/ Post frac GR tool to 3770'. Log well. Frac in Zone. ND Frac Valve. NU BOP.
GIH w/ tubing tag sand at 3585'. Pull up set tubing at 3200'. Swab well. Recover 320 bols diesel, no water.
Swab well back recover diesel and some formation oil. Estimated, and 3 bbls water. Total 750 bbls recovered diesel.
GIH tag fill at 3575'. Landed 2-7/8" tubing string. Total 105 jts at 3343' KB.
Run rod string 7/8" string 130 rods plus ponys, pump 2.25" x 1.5" x 18' RWBC.
03-25-2001 Place well on pump.
04-03-2001 Fluid Level shot at 3115'. Poor recover 50 % oil, 50% water, Averagingg 4 BOPD, 4 BWPD.
Well inactive. No records of when pump jack was removed or rods removed from the well.

Specialty Logs, Misc
Mud Log (353'-TD)
GR-USIT (200' to 3700')

Open Hole Logs (Schlum)
GR-Ind, Neutron-Density
Platform Express

Formation Name: **Mesaverde**
08-06-2003 MIRU BHWS. SICP = SITP = 20#. Blow down. COOH w/ 105 jts 2-7/8" from 3343'. Run Bit & Scraper to 3200'.
GIH w/ tubing set CIBP on 2-7/8" tubing. Set CIBP at 3150'. Load hole from Btm & test Casing to 3000#. Good. COOH.
*08-07-2003 RU wireline. Dumpbail 2 sxs cement on top of CIBP at 3150'. Abandon Mancos.*
RIH w/ Squeeze Perf Gun. Shoot 4 holes at 2308'. BD perfs at 900#. Establish circulation to surfacw w/ 20 bbls water.
GIH w/ 7" retainer. Set retainer at 2293'. Test tubing 3500#. Squeeze 88.5 sxs (33 bbls - 185 ft3) at 12.5 ppg. Good circulation
Bridged off. Displace cement w/ 13.2 bbls wwater. Final pressure 1800#. Sting out. X-O casing valves. Install Frac Valve.
08-08-2003 GIH w/ 6-1/4" bit and DCs on 2-7/8" tubing. Tag and Drill Cement retainer at 2293' plus 25' cement.
SM. Rig repairs. RU Blue Jet. Perforate Menefee Coal Intervals 2250' to 2342' (32 holes). RD. GIH w/ BP & PKR combo.
Zone # 1 (2339' to 2342') - 4.3 BPM @ 2300 psi, ISIP 703, Closure 661 psi. 20 bbls 2% KCl.
Zone # 2 (2306' to 2308') - 4.3 BPM @ 2150 psi, ISIP 760, Closure 730 psi, 20 bbls 2% KCl.
Zone # 3 (2282' to 2284') - 4.3 BPM @ 2560 psi, ISIP 1160, Closure 1041 psi, 20 bbls 2% KCl
Zone # 4 (2261' to 2263') - 4.3 BPM @ 3650 psi, ISIP 2403, Closure 1101 psi, 10 bbls 2% KCl
Zone # 5 (2250' to 2254') - 4.3 BPM @ 3900 psi, ISIP 2908, Closure 1495 psi, 20 bbls 2% KCl
All Zones 2250' to 2342' - 7.3 BPM @ 2200 psi, ISIP 788 psi....Treating just zone # 2.....20 bbls
Isolate and perform injection pump ins across each coal interval. Monitor fall-off. Total fluid pumpd as 120 bbls

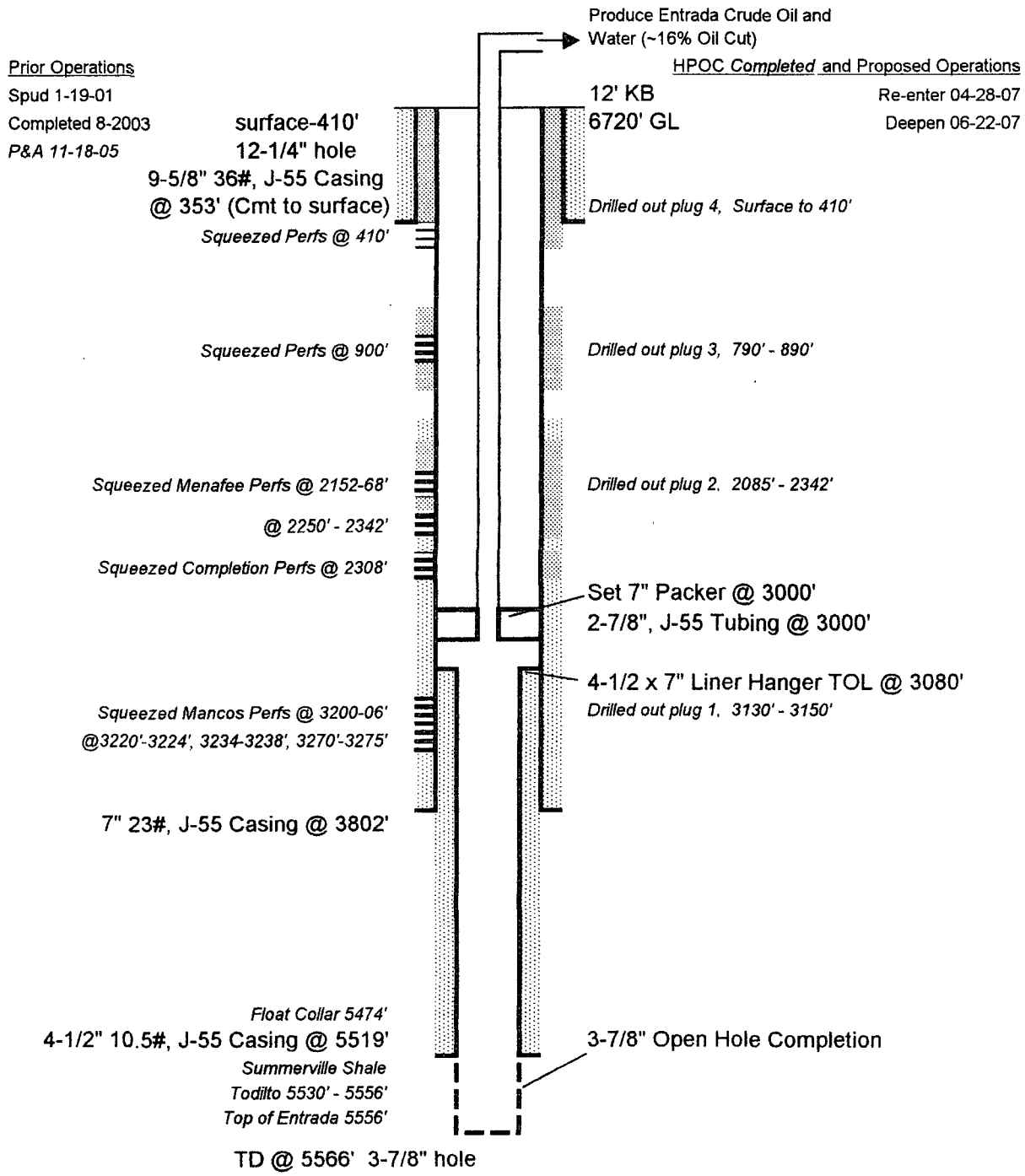
**EXHIBITS TO ACCOMPANY**

**APPLICATION FOR AUTHORIZATION TO INJECT, SECTION VI.**

***Well Data, Entrada Penetration within Area of Review***
***High Plains Operating Company, LLC Wellbore Schematic***

## Eagle Springs "8" Federal #2M

330' FNL, 2275' FEL, Sec 8, T19N, R4W Sandoval County, NM



## EXHIBITS TO ACCOMPANY

## APPLICATION FOR AUTHORIZATION TO INJECT; SECTION VII.

Operational Data

1. Average daily injection rate: 450 bbls; Maximum daily injection rate: 900 bbls; Average annual volume of fluids to be injected: Approximately 165,000 bbls.
2. The system will be a closed system.
3. Average injection pressure: 400 psi; Maximum injection pressure: 1100 psi.
4. Reinjecting produced water from the same formation (Entrada).
5. The Entrada formation injection zone is productive of oil within one mile of proposed injection well. Water analysis of produced water from the Eagle Springs 8 Federal #2M follows.

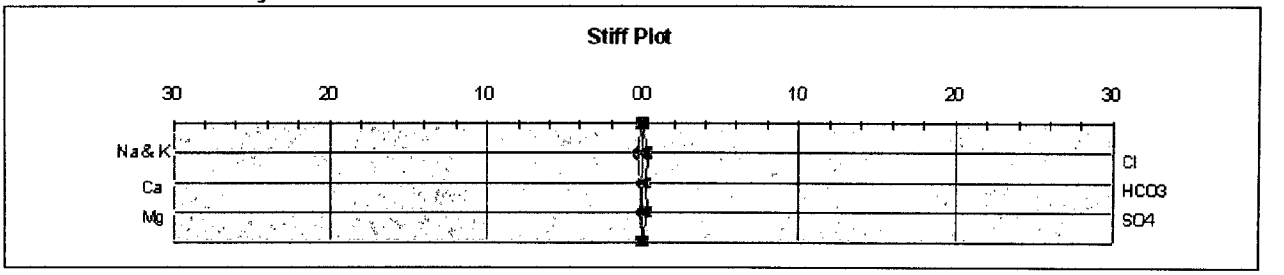
**Key Pressure Pumping Services**
**Water Analysis Result Form**
**Farmington, NM.**
**708 S. Tucker**
**Phone:(505)325-4192**
**Fax:(505)564-3524**
**Zip:87401**

| | | | |
|---|---|---|---|
| Operator: | High Plains Operating | Sample Date: | August 28, 2007 |
| | | Analysis Date: | August 29, 2007 |
| Well | Eagle Springs 8 Fed 2M | District: | Farmington |
| Formation: | Entrada | Requested By: | Brad Salzman |
| County: | San Juan, NM | Technician: | Roger Nash |
| Depth: | | Source: | 1" connection |

**PHYSICAL AND CHEMICAL DETERMINATION**

| | | | | | |
|---|---|---|---|---|---|
| SPECIFIC GRAVITY: | 1.010 | 84 (°F) | S.G. (Corrected): | 1.010 | |
| pH: | 7.77 | | MAGNESIUM: | 19 | ppm |
| RESISTIVITY: | 0.74 | ohm/meter | CALCIUM: | 32 | ppm |
| IRON: | 0.10 | ppm | BICARBONATES: | 242 | ppm |
| H2S: | 0 | ppm | CHLORIDES: | 2772 | ppm |
| POTASSIUM: | 15 | ppm | SODIUM: | 1824 | ppm |
| SULFATES: | 173 | ppm | TDS: | 5077 | ppm |

CaCO3 Scale Tendency = Remote
CaSO4 Scale Tendency = Remote




**Data contained in this document is based on the best information & most current test procedures and materials available. No liability is expressed or implied.**

## EXHIBITS TO ACCOMPANY

## APPLICATION FOR AUTHORIZATION TO INJECT; SECTION VIII.

The injection zone in this wellbore is the basal portion of the Jurassic Entrada sandstone, which is a wind-blown deposit of thinly laminated, cross-bedded material. The lower Entrada is deposited regionally across the San Juan Basin. The sand grains are predominantly fine-graned, subrounded and highly frosted quartz. The lower Entrada has streaks of porosity in the 22% to 24% range with good horizontal permeability. Interbeds of tighter rock will reduce the vertical permeability and keep the injection zone separated from the productive Entrada reservoir approximately 100′ higher.

The regional thickness of the Entrada is about 100′. Where dunes occur, they sit on this regional lower Entrada and the overall Entrada thickness increases. In this wellbore, the total Entrada thickness is approximately 190′, with the top of the Entrada at a depth of 5542′.

The water produced with the oil in this Entrada reservoir has total dissolved solids below 10,000 mg/l. The nearest overlying formation containing drinking water is the Ojo Alamo sandstone, which is at the surface in this area with a base at approximately 100′. No known sources of drinking water are below the Entrada.

## EXHIBITS TO ACCOMPANY

## APPLICATION FOR AUTHORIZATION TO INJECT; SECTION IX.

The current proposed injection perforations from 5668′ to 5712′ were treated with 500 gals of 15% HCL and flushed with 33 bbls of water.

## EXHIBITS TO ACCOMPANY

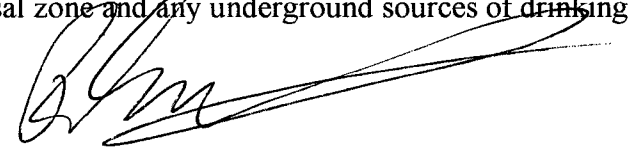
## APPLICATION FOR AUTHORIZATION TO INJECT; SECTION XI.

There are no fresh water wells within one mile of the proposed injection well.

## EXHIBITS TO ACCOMPANY

## APPLICATION FOR AUTHORIZATION TO INJECT; SECTION XII.

High Plains Operating Company, LLC does hereby state that we have examined all available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.



## EXHIBITS TO ACCOMPANY

## APPLICATION FOR AUTHORIZATION TO INJECT; SECTION XIII.

As of this 25th day of September 2007, High Plains Operating Company, LLC has delivered in person a copy of this application to the following, with acknowledgment of receipt documents:

**SURFACE OWNER**

United States Department of the Interior
Bureau of Land Management
Attn: Jim Lovato
1235 La Plata Highway, Ste. A
Farmington, NM 87401

**OFFSET MINERAL OWNER—UNLEASED NAVAJO ALLOTTED**

Federal Indian Minerals Office
Jim Stockbridge—Director-Farmington Indian Minerals Office
Agent for Navajo Allottees
1235 La Plata Highway, Ste. B
Farmington, NM 87401

**PROOF OF PUBLICATION**

As of this 17 day of September 2007, High Plains Operating Company, LLC has sent a notice for publication to the following:

*Albuquerque Journal* (to be published in the September 19, 2007 edition)

NOTICE. High Plains Operating Company, LLC, Attn: Richard Mrlik, 2130 Fillmore St., #211, San Francisco, CA 94115, 415-567-0446 is making application to the New Mexico Oil Conservation Division for administrative approval to dispose of produced water into the Entrada formation through perforations from 5668′ to 5712′ measured depth in the Eagle Springs 8 Federal #1 well located 263′ FNL and 2545′ FEL of section 8-T19N-R4W, Sandoval County, NM. The maximum expected injection rate is 2800 bbls of water per day and the maximum expected injection pressure is 1100 psi. Interested parties may file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, NM 87505 within 15 days of the date of publication of this notice.

**SURFACE OWNER ACKNOWLEDGEMENT OF APPLICATION RECEIPT**

Jim Lovato
United States Department of the Interior
Bureau of Land Management
1235 La Plata Highway, Ste. A
Farmington, NM 87401

High Plains Operating Company, LLC has delivered to Jim Lovato as representative for the United States Department of the Interior–Bureau of Land Management, surface owner, a complete copy of its application with the New Mexico Oil Conservation Division (Form C-108 & exhibits) to inject produced Entrada water in the Eagle Springs 8 Federal #1 (API: 30-043-20949). Receipt of this application is hereby acknowledged.

By: Helen Pierson Date: 9/25/07

**OFFSET MINERAL OWNER—UNLEASED NAVAJO ALLOTTED ACKNOWLEDGEMENT OF APPLICATION RECEIPT**

Federal Indian Minerals Office
Jim Stockbridge—Director-Farmington Indian Minerals Office
Agent for Navajo Allottees
1235 La Plata Highway, Ste. B
Farmington, NM 87401

High Plains Operating Company, LLC has delivered to Jim Stockbridge as agent for the Navajo allottees in the southwest quarter of section 4-T19N-R4W, a complete copy of its application with the New Mexico Oil Conservation Division (Form C-108 & exhibits) to inject produced Entrada water in the Eagle Springs 8 Federal #1 (API: 30-043-20949). Receipt of this application is hereby acknowledged.

By: _____ Date: 9/25/07

RECEIVED
SEP 25 2007
FEDERAL INDIAN MINERALS OFFICE

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

DISTRICT II
1301 W. Grand Ave., Artesia, N.M. 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, N.M. 87410

DISTRICT IV
1220 South St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department

# OIL CONSERVATION DIVISION

1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised October 12, 2005
Submit to Appropriate District Office
State Lease – 4 Copies
Fee Lease – 3 Copies

☐ AMENDED REPORT

## WELL LOCATION AND ACREAGE DEDICATION PLAT

| [1] API Number | [2] Pool Code | [3] Pool Name |
|---|---|---|
| 30-043-20949 | 96899 | ARENA BLANCA ENTRADA, SOUTHEAST |

| [4] Property Code | [5] Property Name | [6] Well Number |
|---|---|---|
| ~~25148~~ 36438 | EAGLE SPRINGS 8 FEDERAL | 1 |

| [7] OGRID No. | [8] Operator Name | [9] Elevation |
|---|---|---|
| 246238 | HIGH PLAINS OPERATING, LLC | 6717' |

### [10] Surface Location

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| B | 8 | 19-N | 4-W | | 263 | NORTH | 2545 | EAST | SANDOVAL |

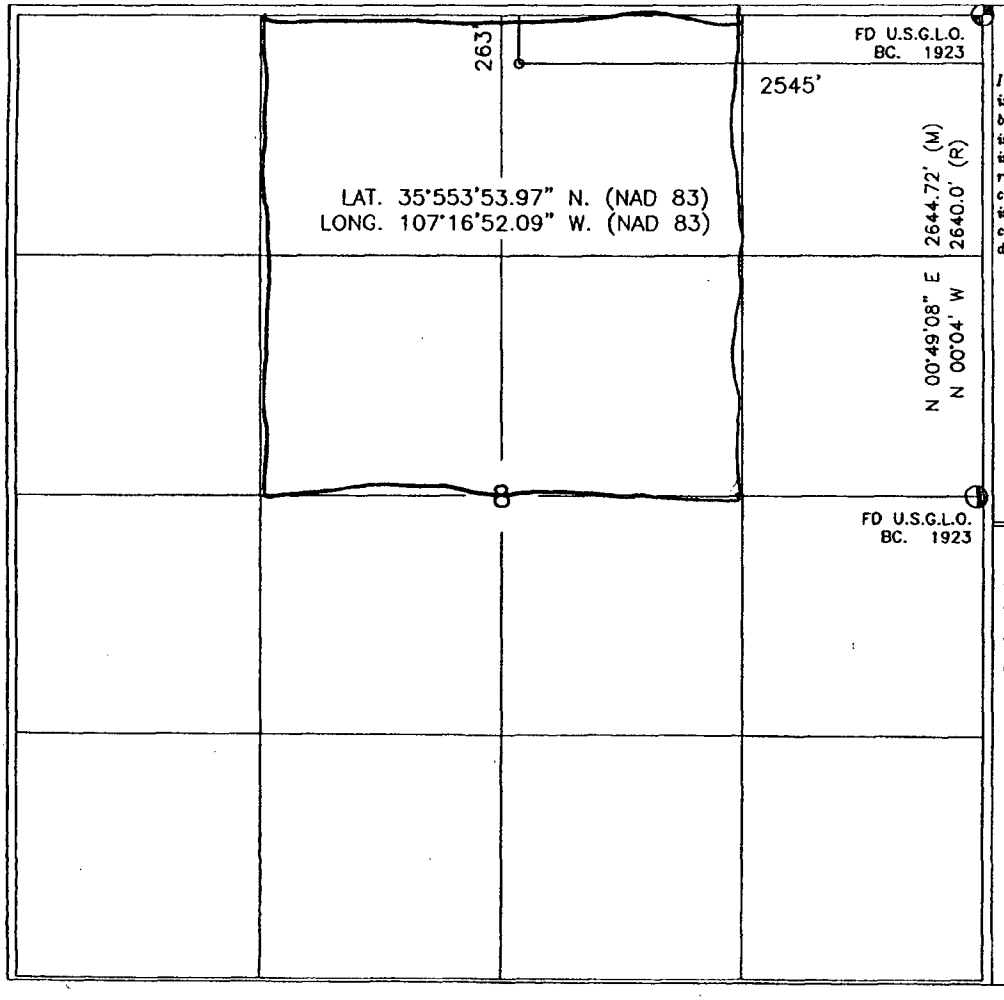
### [11] Bottom Hole Location If Different From Surface

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

| [12] Dedicated Acres | [13] Joint or Infill | [14] Consolidation Code | [15] Order No. |
|---|---|---|---|
| 160 | | | R-11331<br>R-11374 – NSL & NSP |

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

16




### 17 OPERATOR CERTIFICATION

*I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.*

Signature — Date: 1-24-07

RICHARD MELIK
Printed Name

### 18 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 supervision, and that the same is true and correct to the best of my belief.*

SEPTEMBER 20, 2006
Date of Survey

Signature and Seal of Professional Surveyor:

RONALD J. EIDSON
NEW MEXICO
8894
REGISTERED PROFESSIONAL LAND SURVEYOR

01-[illegible]-2007

Certificate Number

**High Plains Operating Company, LLC**
**Eagle Springs "8" Federal #1—Re-entry program**

**Original API #:** 30-043-20949
**Original well total depth:**
5,740′ driller's measured depth,
5,744′ logger's measured depth
**Well location:** NW quarter of the NE quarter of Section 8 Township 19 North Range 4 West Sandoval County, New Mexico
**Surface location:** 263′ from the north line and 2,545′ from the east line
**Bottom hole location:** 303.4′ FNL and 2,552.4′ FEL at a plugged back measured depth of 5,630.0′ and a true vertical depth of 5,629.63′ from Scientific Drilling's Gyro Survey
**Federal Lease #:** NM 99705

## DRILLING PROGRAM

**Synopsis:** High Plains Operating Company, LLC plans to re-enter the Eagle Springs "8" Federal #1 well, drill out the plugs, perforate and swab and evaluate the Entrada for productive potential. Depending on swab results, the #1 well will be completed as either an Arena Blanca Entrada, Southeast Pool producing well or as a salt-water disposal well in the lowermost portion of the Entrada formation.

### 1. FORMATION TOPS

Actual geological formation tops penetrated in the original #1 well

| FORMATION NAME | MEASURED DEPTH |
|---|---|
| Ojo Alamo Sandstone | Surface |
| Pictured Cliffs | 420′ |
| Cliff House | 849′ |
| Menefee | 1,556′ |
| Point Lookout Sandstone | 2,338′ |
| Mancos | 2,485′ |
| Gallup Sandstone | 3,270′ |
| Greenhorn | 4,320′ |
| Graneros | 4,397′ |
| Dakota Sandstone | 4,564′ |
| Morrison | 4,768′ |
| Todilto | 5,510′ |
| Entrada Sandstone | 5,542′ |
| Carmel | 5,730′ |
| Total Depth | 5,740′ |

37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; cored intervals, and all drill-stem, tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries);

| FORMATION | TOP | BOTTOM | DESCRIPTION, CONTENTS, ETC. |
|---|---|---|---|
| Pictured Cliffs | 420 | | |
| Cliff House | 849 | | |
| Menefee | 1556 | | |
| Point Lookout | 2338 | | |
| Mancos | 2485 | | |
| Greenhorn | 4320 | | |
| Graneros | 4397 | | |
| Dakota | 4564 | | |
| Morrison | 4768 | | |
| Todilto | 5510 | | |
| Entrada | 5542 | | |

38. GEOLOGIC MARKERS

| NAME | TOP | |
|---|---|---|
| | MEAS. DEPTH | TRUE VERT. DEPTH |
| Pictured Cliffs | 420 | |
| Cliff House | 849 | |
| Menefee | 1556 | |
| Point Lookout | 2338 | |
| Mancos | 2485 | |
| Greenhorn | 4320 | |
| Graneros | 4397 | |
| Dakota | 4564 | |
| Morrison | 4768 | |
| Todilto | 5510 | |
| Entrada | 5542 | |

**REQUEST FOR ADMINISTRATIVE APPROVAL FOR NON-STANDARD LOCATION FOR PENWELL ENERGY INC.**
**EAGLE SPRINGS "8" FEDERAL #1 OIL WELL**
**263' FNL & 2,548' FEL "B"**
**Section 8 – T19N – R4W**
**Sandoval County, New Mexico**
**API # 30-043-20949**

1. The well is on BLM surface and minerals. The BLM lease number for this well is NM 99705 (Approved 3160-3 attached). The existing location is a non-standard (95' from west quarter- quarter line and 263' from north section line of unit letter "B") location as per OCD oil well rules.

2. The attached C-102 shows the well location and proration unit (NW4/NE4 of Sec. 8 which is a standard 40 acre oil-proration unit).

3. According to NMOCD records, there is no production within a one (1) mile radius of the location.

4. All offset 40 acre proration units are owned by Penwell Energy as per the attached acreage map. All Penwell / SJJV held acreage is colored yellow.

5. The location was selected based on a 1998 3-D seismic survey with lines spaced @ quarter mile intervals. A standard drilling unit does not allow drilling at the highest point of the structure as evidenced by the attached 3-D seismic image for this section.

6. Directional drilling is not feasible because it is not cost effective for this wildcat well.

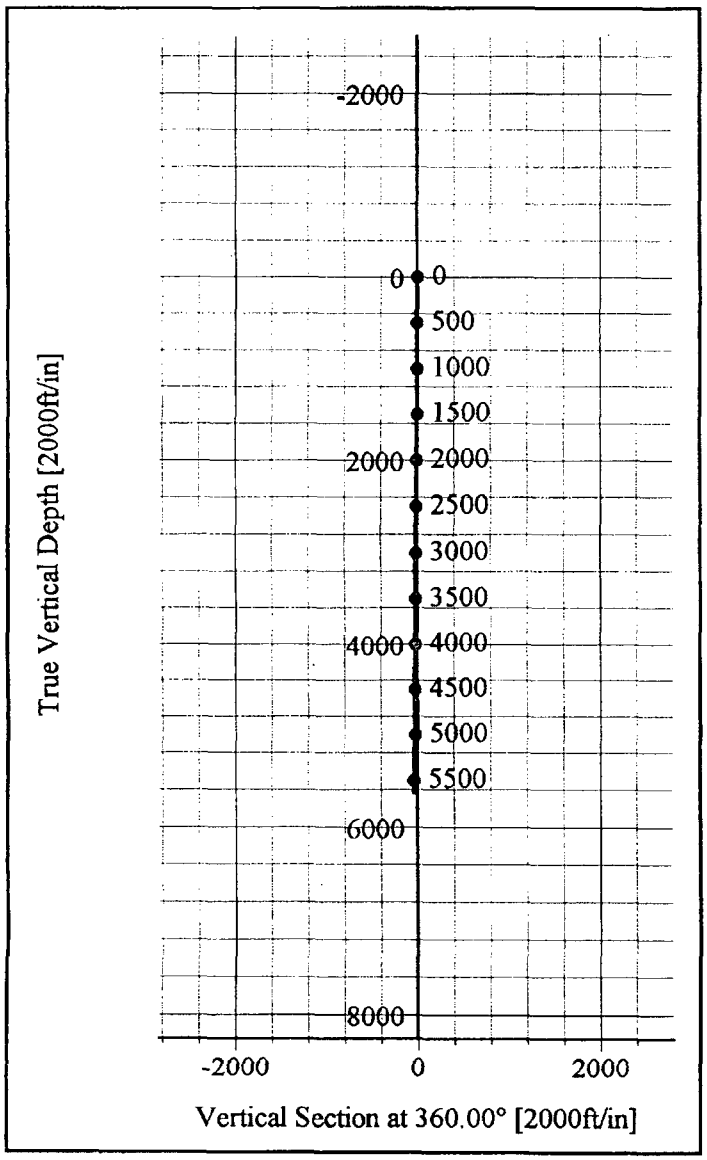
Scientific Drilling

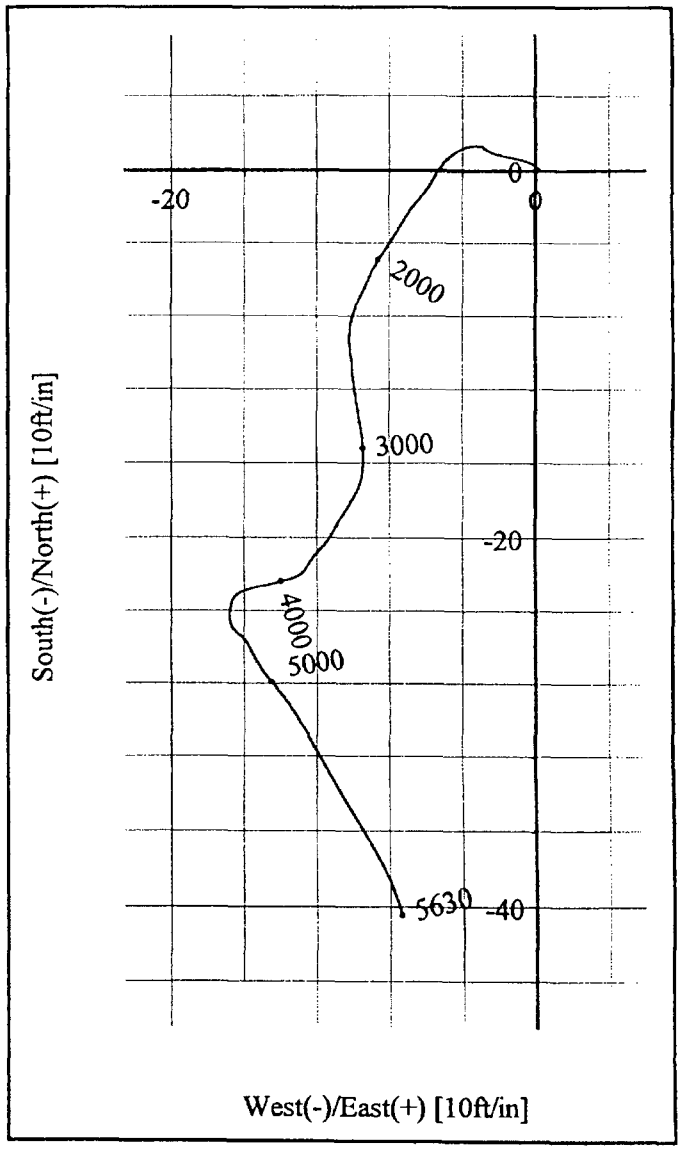
# PENWELL ENERGY INC.

TM

All Angles Relative To True North

True North: 0.00
Magnetic North: 0.00




**BOTTOM HOLE CLOSURE**

**41.11 ft. 190.33° Azimuth**

**FINAL STATION**

**5630' MD 5629.63' TVD**
**1.52° Angle 165.22° Azimuth**
**South 40.44 ft. West 7.37 ft.**
**-40.44' Vert. Sect.**

**Field: Sandoval County, NM**
**Site: Eagle Springs 8 Fed. #1**
**Well: #1**
**Wellpath: OH Original hole**
**Survey: Survey #1**

Survey: Survey #1 (#1/OH Original hole)

Created By: Judi Moore Date: 3/7/2000

Checked: _____ Date: _____

Approved: _____ Date: _____

37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; cored intervals; and all drill-stem, tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries):

| FORMATION | TOP | BOTTOM | DESCRIPTION, CONTENTS, ETC. |
|---|---|---|---|
| Entrada Sand | 5,542' | 5,735' | Sandstone |
| Entrada Sand | 5,538' | 5,552' | Ran DST #1. Ran 1,500' of diesel for cushion. Tool opened w/fair blow increasing to good blow. Tool open 2 hrs. and 23 minutes. Shut tool. Recovered 1432' of diesel, 2635' of oil and no water. IHP of 2,824#, IFP 556#, FFP of 1,448#, FSIP 2,050#, FHP 2,764#. |

38. GEOLOGIC MARKERS

| NAME | TOP | |
|---|---|---|
| | MEAS. DEPTH | TRUE VERT. DEPTH |
| Pictured CLiffs | 420' | |
| Cliff House | 849' | |
| Menefee | 1,556' | |
| Point Lookout | 2,338' | |
| Mancos | 2,485' | |
| Greenhorn | 4,320' | |
| Graneros | 4,397' | |
| Dakota | 4,564' | |
| Morrison | 4,768' | |
| Todilto | 5,510' | |
| Entrada | 5,542' | |
| Carmel | 5,735' | |

NOTICE. High Plains Operating Company, LLC, Attn: Richard Mirkl, 2130 Fillmore St., #211, San Francisco, CA 94115, 415-567-0446, is making application to the New Mexico Oil Conservation Division for administrative approval to dispose of produced water into the Entrada formation through perforations from 5668' to 5712' measured depth in the Eagle Springs 8 Federal #1 well, located 283' FNL and 2545' FEL of section 8-T19N-R4W, Sandoval County, NM. The maximum expected injection rate is 2800 bbls of water per day and the maximum expected injection pressure is 1100 psi. Interested parties may file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, NM 87505 within 15 days of the date of publication of this notice.
Journal: September 19, 2007

STATE OF NEW MEXICO
County of Bernalillo SS

Bill Tafoya, being duly sworn, declares and says that he is Classified Advertising Manager of **The Albuquerque Journal**, and that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Session Laws of 1937, and that payment therefore has been made of assessed as court cost; that the notice, copy of which is hereto attached, was published in said paper in the regular daily edition, for 1 times, the first publication being on the 19 day of Sept., 2007 and the subsequent consecutive publications on _____, 20__.

Sworn and subscribed to before me, a Notary Public, in and for the County of Bernalillo and State of New Mexico this 19 day of Sept. of 2007

PRICE $15.56

Statement to come at end of month.

ACCOUNT NUMBER C80301

OFFICIAL SEAL
Elyn Sloane
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires: 4-4-08

CLA-22-A (R-1/93)

EAGLE SPRINGS 8 FEDERAL # 1
PLUG AND ABANDONMENT SUNDRY
11-28-2005 SUBMITTAL

11-21-2005 Move Rig to Eagle Springs "8" Federal # 1
Est inj rate down tubing.
Prepare for Plug & Abandonment Operations.
Contacted BLM (Sharon ) & NMOCD ( Left message ) regarding cmt operations on 11-21-05

**COLE THOMAS (BLM) ON LOCATION DURING ALL PLUGGING OPERATIONS.**
***NMOCD (Monica) also was present during a portion of plugging operations.***

11-22-2005 **Plug # 1 A** ( 5,400'-5,547' Perfs @ 5,534'-5,546' ) 11.5 bbls cmt. **Plug # 1 B** ( 5,400'-5,350' ) 2 bbls cmt top PKR.
**Plug # 2** ( 4,420'-4,320', Mix & pump 6 bbls cmt.
**Plug # 3,** ( 3,188-3,088') Mix & Pumpe 6 bbls cmt. Tag cmt @ 3,029'. **Perforate 4 squeeze holes @ 2,400', for Plug # 4.**
Pump dwn 7" csg & circ fluid out BH. TIH w/ 7" (Baker cmt retainer ). Shut down for night.

11-23-2005 **Plug # 4 (2,400'-2,275')** Set retainer @ 2,354. Mix & Pump 13 bbls cmt. Pump 10 bbls below ret & 3 bbls on top ret.
**Plug # 5 ( 902'-802').** Set Retainer @ 894', Mix & Pumpe 13 bbls cmt. Pump 10 bbls below ret & 3 bbls on top ret.
**Plug # 6 ( 450'-325').** Perforate 4 squeeze holes @ 450'. Pump 32 bbls cmt dwn 7" csg, Circ 2 bbls cmt out BH.
**Plug # 7** ( Install Dryhole Marker @ surface w/ 5 sxs cmt.
RDMO surface

STATE OF NEW MEXICO
County of Bernalillo SS

Bill Tafoya, being duly sworn, declares and says that he is Classified Advertising Manager of **The Albuquerque Journal**, and that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Session Laws of 1937, and that payment therefore has been made of assessed as court cost; that the notice, copy of which is hereto attached, was published in said paper in the regular daily edition, for 1 times, the first publication being on the 4 day of Oct., 2007 and the subsequent consecutive publications on _____, 20___.

Sworn and subscribed to before me, a Notary Public, in and for the County of Bernalillo and State of New Mexico this 19 day of Oct., of 2007

PRICE $15.56

Statement to come at end of month.

ACCOUNT NUMBER C80301

CLA-22-A (R-1/93)

NOTICE. High Plains Operating Company, LLC, Attn: Richard Mrlik, 2130 Fillmore St., #211, San Francisco, CA 94115, 415-567-0446 is making application to the New Mexico Oil Conservation Division for administrative approval to dispose of produced Entrada water into the Entrada formation from 5600' to 5725' measured depth in the Eagle Springs 8 Federal #1 well located 263' FNL and 2545' FEL of section 8-T19N-R4W, Sandoval County, NM. The maximum expected injection rate is 2800 bbls of water per day and the maximum expected injection pressure is 1700 psi. Interested parties may file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, NM 87505 within 15 days of the date of publication of this notice.
Journal: October 6, 2007

OFFICIAL SEAL
Elyn Sloane
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires: 4-16-10

STATE OF NEW MEXICO
County of Bernalillo SS

Bill Tafoya, being duly sworn, declares and says that he is Classified Advertising Manager of **The Albuquerque Journal**, and that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Session Laws of 1937, and that payment therefore has been made of assessed as court cost; that the notice, copy of which is hereto attached, was published in said paper in the regular daily edition, for 1 times, the first publication being on the 4 day of Oct., 2007 and the subsequent consecutive publications on _____, 20___.

NOTICE. High Plains Operating Company, LLC, Attn: Richard Mrlik, 2130 Fillmore St., #211, San Francisco, CA 94115, 415-567-0446 is making application to the New Mexico Oil Conservation Division for administrative approval to dispose of produced Entrada water into the Entrada formation from 5600' to 5725' measured depth in the Eagle Springs 8 Federal #1 well located 263' FNL and 2545' FEL of section 8-T19N-R4W, Sandoval County, NM. The maximum expected injection rate is 2800 bbls of water per day and the maximum expected injection pressure is 1700 psi. Interested parties may file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, NM 87505 within 15 days of the date of publication of this notice.
Journal: October 6, 2007

Sworn and subscribed to before me, a Notary Public, in and for the County of Bernalillo and State of New Mexico this 5 day of Oct., of 2007

PRICE $15.54

Statement to come at end of month.

ACCOUNT NUMBER C8E301

OFFICIAL SEAL
Elva Sloane
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires 4-11-08

CLA-22-A (R-1/93)

## Jones, William V., EMNRD

**From:** Jones, William V., EMNRD
**Sent:** Tuesday, October 02, 2007 2:45 PM
**To:** 'Butch Butler'
**Cc:** Ezeanyim, Richard, EMNRD; Perrin, Charlie, EMNRD
**Subject:** SWD Application on behalf of HPOC: Eagle Springs 8 Federal #1 API No. 30-043-20949

Hello Butch:
I have reviewed your application and only have the following comments:

Can you show my something official from Charlie in Aztec allowing the uncoated tubing for one year - for our file in this case?

I am assuming the injectivity test was a Step Rate Test or its equivalent and the pressures shown are surface pressures. Based on this, I would allow a maximum surface injection pressure of 1,700 psi - we always reserve a factor of safety below the fracturing point. If you change the tubing to plastic coated after one year, you will need to run another injection test because the friction will be different.

The way I read your application, you want a permit to inject from 5,600 feet to 5,725 feet. Your notice in the paper only mentions the current perforated interval (5668 - 5712) why is that?

I know we talked about this before, and you do have some tighter intervals located just above your injection perfs, but now that the application is here, I must comment: Since your injection well is only slightly deeper and very nearby your producing well, high injection pressures would be unwise.

Of course, some polymer or surfactant injection schemes are used such as this to carry some oil from injector to producer in high water-cut (waterwet) reservoirs. You could talk to an experienced reservoir engineer or a Petroleum Engineering enhanced recovery professor to find out more about that. Have you run any reservoir simulations to see if your injection well nearby will hurt you (or help?).

What is that on the elogs at 4530 and at 4630?

Please reply, so I know you received this email, and I will release this after the 15 day suspence period.

Regards,

William V. Jones PE
New Mexico Oil Conservation Division
1220 South St. Francis
Santa Fe, NM 87505
505-476-3448

## Jones, William V., EMNRD

**From:** Butch Butler [butch@chaffee.net]
**Sent:** Tuesday, October 02, 2007 5:47 PM
**To:** Jones, William V., EMNRD
**Subject:** RE: SWD Application on behalf of HPOC: Eagle Springs 8 Federal #1 API No. 30-043-20949

I will rerun the Albuquerque add tomorrow with the entire interval we are seeking approval for, not just where the current perforations are. Will send an updated PDF with the "proof" ASAP.

Will keep you in the loop as we begin our operation.

Take care,
b

At 04:18 PM 10/2/2007, you wrote:

> Butch:
> To be consistent with other applications, you should probably re-run the newspaper notice to include the larger injection interval.
> I will wait for something from Charlie about the coating - and call him if he does not send something soon.
>
> Good Luck with this project.
>
> Regards,
>
> William V. Jones PE
> New Mexico Oil Conservation Division
> 1220 South St. Francis
> Santa Fe, NM 87505
> 505-476-3448

---

**From:** Butch Butler [ mailto:butch@chaffee.net]
**Sent:** Tuesday, October 02, 2007 3:54 PM
**To:** Jones, William V., EMNRD
**Cc:** Ezeanyim, Richard, EMNRD; Perrin, Charlie, EMNRD; rmrlik@intertie.com; brads@titusconsulting.net
**Subject:** Re: SWD Application on behalf of HPOC: Eagle Springs 8 Federal #1 API No. 30-043-20949

Hi Will, Richard & Charlie: I will respond to Will's questions in order.

- Regarding Charlie's response to the uncoated tubing, I have nothing official, only an indication from him that when he reviews the application, he would be inclined to give us the 1-year test period with uncoated tubing. Now that you have the application and we also delivered one to Steve Hayden in Aztec, perhaps Charlie would give a more "official" ruling in this matter? What do we need to do here?
- Regarding the injectivity test, these are surface pressures. Understood that when we change to lined tubing, we may need to rerun this test. Our hope is that we will have much lower pressures, i.e. less than 800-900 psi, but we'll see where we end up once we start injecting from the #2M well.
- Regarding the discrepancy with the requested injection depths in the application and the legal pub notice, this is an error on my part due to timing. I did the legal notice prior to my conversation with Will regarding where exactly we specify the interval we are requesting injection for versus the current perforated interval. We would be happy to run the legal notice again in the Albuquerque

Journal specifying 5600' to 5725' if you think this is best. Just let me know.

- Regarding the tight streaks in the Entrada, our hope is that for the near term, we can produce the #2M well at modest rates (by Entrada productive standards) and inject in the #1 well in the current perforations from 5668' to 5712'. If necessary, our next step would be to add perforations from 5634' to 5654' where there is better porosity but still 1 tighter interval from 5630' to 5634'. We believe this tight streak will keep us separated from the producing reservoir at about 5560 in the #2M. We have not done a reservoir simulation at this point. WE HEAR YOUR CAUTION THAT HIGH INJECTION PRESSURES WOULD BE UNWISE! Clearly, this is a concern, but we note that injection was done at the bottom of the Entrada in other Entrada producing fields in wells within the field. Admittedly, these wells were not as close as our two wells, however they were still pretty close (less than 1000' as I recall).
- Regarding the zones at 4530' and 4630', these are Cretaceous sand intervals. The upper interval has better porosity at about 14%, but lower resistivity at about 17 ohmm. The deeper interval (Dakota) has intrigued me as the resistivity is quite high (in the 100 ohmm range) but density porosity is in the 8-10% range. I believe there is gas in this interval, but it might be difficult to commercially extract.

I hope this answers your questions. Let me know on the legal notice and how we should handle an opinion from Charlie on unlined tubing for the 1-year test period. If you need anything else, I'm standing by.

As always, much thanks for your assistance with this matter,
b

At 02:44 PM 10/2/2007, Jones, William V., EMNRD wrote:

> Hello Butch:
> I have reviewed your application and only have the following comments:
>
> Can you show my something official from Charlie in Aztec allowing the uncoated tubing for one year - for our file in this case?
>
> I am assuming the injectivity test was a Step Rate Test or its equivalent and the pressures shown are surface pressures. Based on this, I would allow a maximum surface injection pressure of 1,700 psi - we always reserve a factor of safety below the fracturing point. If you change the tubing to plastic coated after one year, you will need to run another injection test because the friction will be different.
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> The way I read your application, you want a permit to inject from 5,600 feet to 5,725 feet. Your notice in the paper only mentions the current perforated interval (5668 - 5712) why is that?
>
> I know we talked about this before, and you do have some tighter intervals located just above your injection perfs, but now that the application is here, I must comment: Since your injection well is only slightly deeper and very nearby your producing well, high injection pressures would be unwise.
>
> Of course, some polymer or surfactant injection schemes are used such as this to carry some oil from injector to producer in high water-cut (waterwet) reservoirs. You could talk to an experienced reservoir engineer or a Petroleum Engineering enhanced recovery professor to find out more about that. Have you run any reservoir simulations to see if your injection well nearby will hurt you (or

# Injection Permit Checklist 2/8/07

**SWD Order Number** 1103 Dates: Division Approved _____ District Approved _____

Well Name/Num: Eagle Springs 8 Federal #1 Date Spudded: 12/11/99

API Num: (30-) 043-20949 County: Sandoval

Footages 263 FNL/~~25~~ 545 FEL Sec 8 Tsp 19N Rge 4W

Operator Name: High Plains Operating Company LLC Contact Richard Mrlik

Operator Address: 2130 Fillmore St. #211 San Francisco, CA, 94115

Current Status of Well: TAED Planned Work: _____ Inj. Tubing Size: 2 7/8 @ 3579' Not Lined

OGRID=24623 HPOC

Rule 40 DK

| | Hole/Pipe Sizes | Depths | Cement | Top/Method |
|---|---|---|---|---|
| Surface | 12 1/4 9 5/8 | 400' | 270 | Circ |
| Intermediate | | | | |
| Production | 8 3/4 7" | 5,740' | 1085 | 2,400' |
| Last DV Tool | | 3103' (Circ below DV) | | |
| Open Hole/Liner | | | | |
| Plug Back Depth | TD=~~5740~~ | | | |

Diagrams Included (Y/N): Before Conversion ✓ After Conversion ✓

Checks (Y/N): Well File Reviewed _____ ELogs in Imaging ✓

(96079) Arena Blanca Entrada SE

| Intervals: | Depths | Formation | Producing (Yes/No) |
|---|---|---|---|
| Salt/Potash | | | |
| Capitan Reef | | | |
| Cliff House, Etc: | | | |
| Formation Above | 5542 | ~~Jurassic~~ Entrada | |
| Top Inj Interval | ~~5668~~ 5600 | Lower Entrada | |
| Bottom Inj Interval | ~~5712~~ 5,725 | | |
| Formation Below | 5735 | Carmel | |

1700' From Step Rate Test PSI Max. WHIP

NO Open Hole (Y/N)

NO Deviated Hole (Y/N)

**Fresh Water**: Depths: no wells nearby Wells(Y/N) NO Analysis Included (Y/N): NO Affirmative Statement ✓

**Salt Water Analysis**: Injection Zone (Y/N/NA) Entrada DispWaters (Y/N/NA) _____ Types: Entrada (TDS ≥ 5100)

**Notice**: Newspaper(Y/N) ✓ Surface Owner BLM Mineral Owner(s) ✓

Other Affected Parties: High Plains only / Fed mineral

**AOR/Repairs**: NumActiveWells 1 Repairs? NO Producing in Injection Interval in AOR —

AOR Num of P&A Wells 0 Repairs? — Diagrams Included? — RBDMS Updated (Y/N) _____

Well Table Adequate (Y/N) ✓ AOR STRs: Sec _____ Tsp _____ Rge _____ UIC Form Completed (Y/N) _____

New AOR Table Filename _____ Sec _____ Tsp _____ Rge _____ This Form completed _____

**Conditions of Approval:** Sec _____ Tsp _____ Rge _____ Data Request Sent _____

Cyclic water? Model?

**AOR Required Work:** _____

**Required Work to this Well:** _____