

DATE IN <u>10.20.10</u>	SUSPENSE	ENGINEER <u>TW.</u>	LOGGED IN <u>10.20.10</u>	TYPE <u>IPI</u>	APP NO. <u>1029432513</u>
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ABOVE THIS LINE FOR DIVISION USE ONLY

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



ENervest

WLH Unit #45

**ADMINISTRATIVE APPLICATION CHECKLIST** 30-015-37025

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.

Shirley Galik  
Print or Type Name

Shirley Galik  
Signature

Sr. Regulatory Tech  
Title

10/19/2010  
Date

sgalik@enervest.net  
e-mail Address

713-495.1514



October 19, 2010

New Mexico Oil Conservation Division  
Attention Mr. Terry Warnell  
1220 South St. Francis Drive  
Santa Fe, NM 87505

RE: Injection Pressure Increase Request  
**West Loco Hills G4S Unit #45** (R-13128),  
Loco Hills; Queen-Grayburg-San Andres Pool (39520)  
Eddy County, New Mexico

RECEIVED OGD  
2010 OCT 20 PM 3:55

Dear Mr. Warnell,

Enverest Operating, LLC, (OGRID 143199) is requesting an exception to the approved injection pressure of 880 psi for the **WLHU #45** injection well, (API #30-015-37025, perfs 2670-94). Based on the attached Step Rate Test data, Enervest requests that the allowable surface injection pressure be raised to 1150 psi. This increase is needed to balance injection and withdrawal rate in order to optimize waterflood operations.

At the current injection pressure limit, we are not able to inject enough water into the formation to effectively drain the reservoir through the producers.

The sections of the unit where the well is located have higher oil saturations which imply return for higher oil recovery.

Sincerely,

A handwritten signature in black ink, appearing to read 'Josh Caldwell', written over a horizontal line.

Josh Caldwell  
Production Engineer

Attachment

**ENERVEST, LTD.**

1001 FANNIN STREET, SUITE 800 • HOUSTON, TEXAS 77002-6707 • 713.659.3500 • FAX 713.659.3556

Step Rate Test



Cardinal Surveys Company

15-Oct-10

Enervest Operating LLC

Well: W.L.H. Unit No. 45

Field;

County: Eddy County, New Mexico

SC 59380

File No. 20???

Intercept @ 414.4 BPD, 2,320.4 BH PSIA & Surface Intercept @ 1,152 PSIA

Downhole PSI Tool Ser. No. CSC2601  
Surface PSI Gauge Ser. No. 10213  
Tool @ 2,680'

	Start	End	Rate
1	1:15 PM	2:00 PM	0 2,680'
2	2:00 PM	2:30 PM	100
3	2:30 PM	3:00 PM	200
4	3:00 PM	3:30 PM	300
5	3:30 PM	4:00 PM	400
6	4:00 PM	4:30 PM	600
7	4:30 PM	5:00 PM	900
8	5:00 PM	5:15 PM	0
9			
10			
11			
12			
13			
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16			
17			
18			

RECEIVED OGD  
2010 OCT 20 P 3:55

Step Rate Test  
15-Oct-10



Enervest Operating LLC  
Well: W.L.H. Unit No. 45  
Field:  
Location: Eddy County, New Mexico

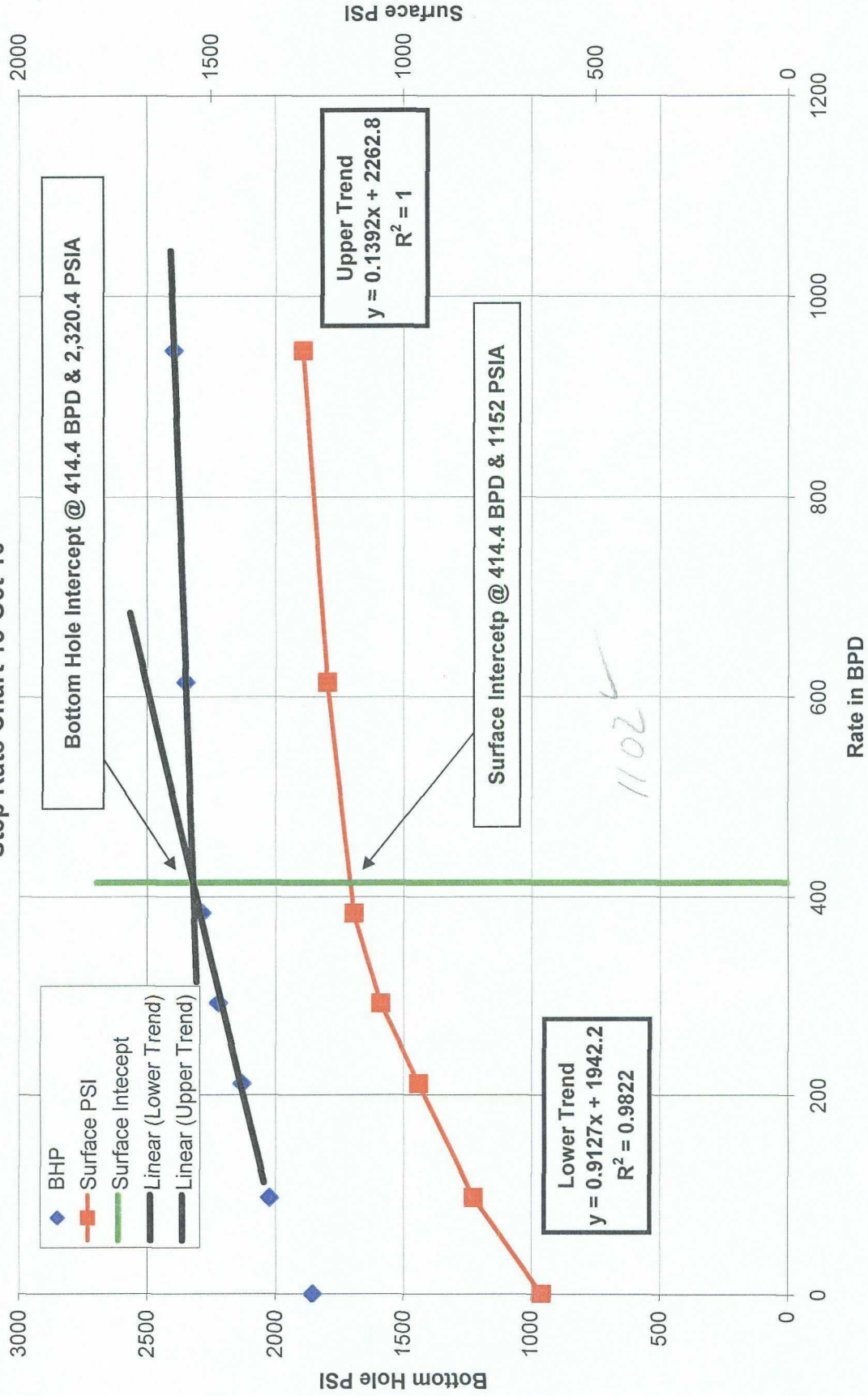
	S Time	E Time	D Time Min	Last Rate BPD	Step BPD	BHP PSIA	Surf PSIA	Cum BBL	Delta BBL	Avg. BPD	Lower Trend	Upper Trend
1	1:15 PM	2:00 PM	45	0	0	1855.5	639.2	0	0	0		
2	2:00 PM	2:30 PM	30	100	100	2021.6	816.8	2	2	96		
3	2:30 PM	3:00 PM	30	200	100	2128.5	960.1	6.4	4.4	211	2128.5	
4	3:00 PM	3:30 PM	30	300	100	2221.7	1058.7	12.5	6.1	293	2221.7	
5	3:30 PM	4:00 PM	30	400	100	2286.9	1129.9	20.5	8	384	2286.9	
6	4:00 PM	4:30 PM	30	600	200	2348.3	1198.7	33.3	12.8	614		2348.3
7	4:30 PM	5:00 PM	30	900	300	2394.4	1262	53	19.7	946		2394.4
8	5:00 PM	5:15 PM	15	0	0	2383.6	1242.3	53	0	0		
9												
10												
11												
12												
13												
14												
15												
16												
										0.9127	1942.2	
										0.1392	2262.8	
									intersect	414.479638	BPD	
									BHP PSI	2320.49557	PSIA	



Enervest Operating LLC

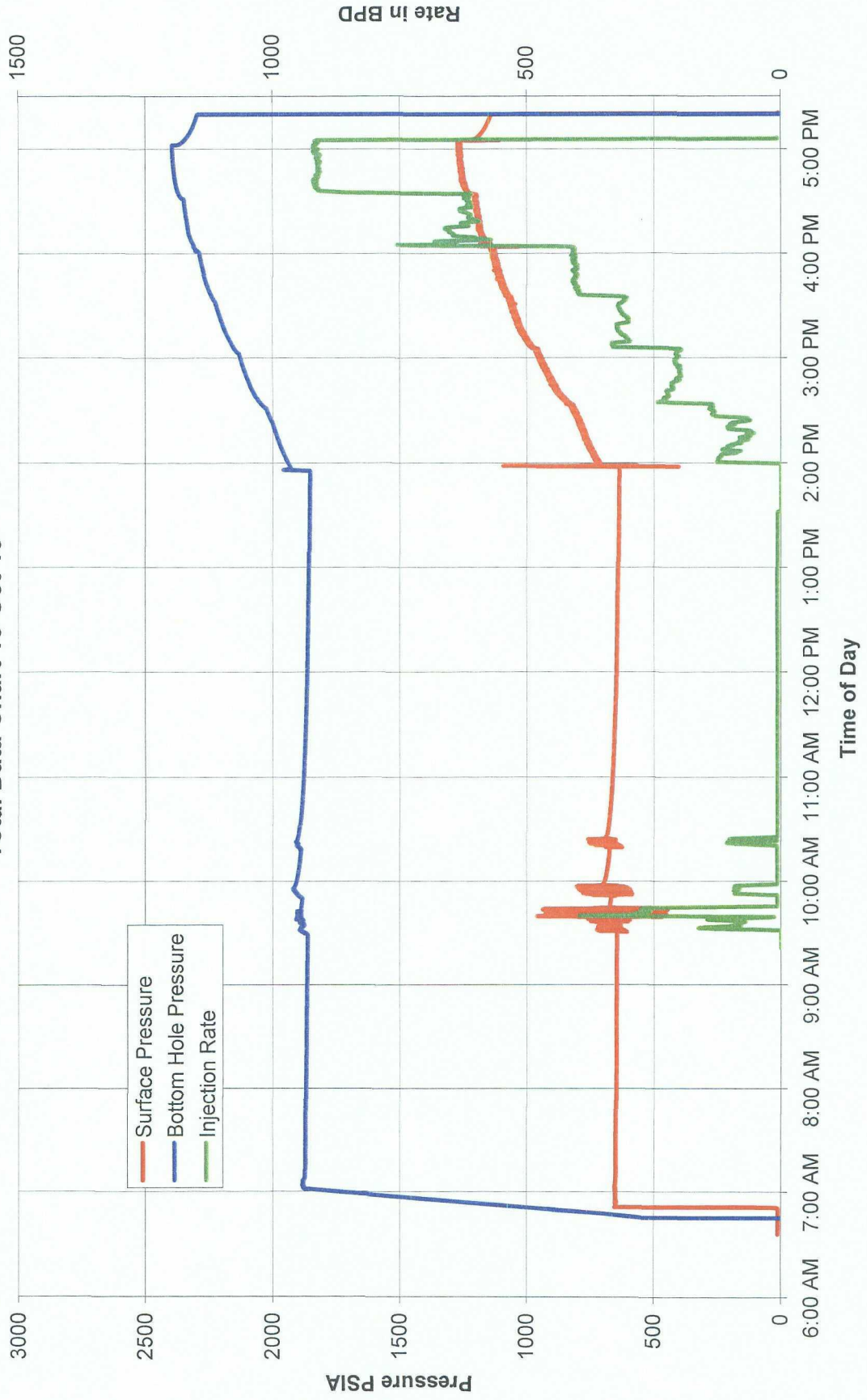
W.L.H. Unit No. 45

Step Rate Chart 15-Oct-10





Enervest Operating LLC  
W.L.H. Unit No. 45  
Total Data Chart 15-Oct-10



**WLHG4S #45**  
**West Loco Field**  
**Eddy County**  
**30-015-37025**

**Current Wellbore Schematic**

Ground Level 3,493'  
KB 13  
Spud Date 10/23/2009  
Rig Release 10/30/09

**Injector**

12 1/4" Hole

TOC @ Surface

8 5/8" 24# J-55 Csg @ 419'  
Cmt w/ 425 Sx to Surface

7 7/8" Hole

2 3/8 " 4.7# J-55 Tbg @ 2,650'PCID

G6 Packer @ 2,645'

Perfs 2,670-2,694' (Total of 150 holes)

4 1/2" 10.5# J-55 Csg @ 2,785'  
Cmt w/ 575 Sx to Surface'

TD 2,800'  
PBSD 2,741'

Sonia Miranda  
4/19/2010

OCD-ARIESIA  
MAR 16 2009

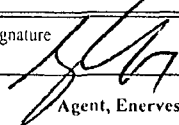
FORM APPROVED  
OMB No. 1004-0137  
Expires March 31, 2007

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
**APPLICATION FOR PERMIT TO DRILL OR REENTER**

1a. Type of work. <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. <b>NM071060X LC-050429 B</b>	
1b. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name	
2. Name of Operator <b>EnerVest Operating, Ltd.</b>		7. If Unit or CA Agreement, Name and No	
3a. Address <b>1001 Fannin, Suite 800 Houston, Texas 77002-6707</b>		8. Lease Name and Well No. <b>WLH G4S Unit #45</b>	
3b. Phone No. (include area code) <b>713/495-6530</b>		9. API Well No. <b>30-015-37005</b>	
4. Location of Well (Report location clearly and in accordance with any State requirements *) At surface <b>660' FSL AND 1980' FWL (UNIT N)</b> At proposed prod. zone		10. Field and Pool, or Exploratory <b>Loco Hills; QU-GB-SA</b>	
11. Sec., T., R. M. or Blk. and Survey or Area <b>Sec 12, T-18-S R-29-E</b>		12. County or Parish <b>Eddy</b>	
13. State <b>NM</b>		14. Distance in miles and direction from nearest town or post office* <b>7 miles Southwest of Loco Hills, New Mexico</b>	
15. Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig unit line, if any) <b>660'</b>	16. No. of acres in lease <b>5307.73 (Unit Acreage)</b>	17. Spacing Unit dedicated to this well <b>NAC 4D</b>	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft <b>900'</b>	19. Proposed Depth <b>2800'</b>	20. BLM/BIA Bond No. on file <b>NM-B-0010838 NM Bond 503</b>	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) <b>GL 3493.3'</b>	22. Approximate date work will start* <b>02/01/2009</b>	23. Estimated duration <b>10 days</b>	
24. Attachments			

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, shall be attached to this form:

- |  |  |
|--|--|
| 1. Well plat certified by a registered surveyor.   | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).    |
| 2. A Drilling Plan   | 5. Operator certification  |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office) | 6. Such other site specific information and/or plans as may be required by the authorized officer. |

25. Signature 	Name (Printed/Typed) <b>Gary Miller</b>	Date <b>12-31-08</b>
Title <b>Agent, Enervest Operating, Ltd.</b>		
Approved by (Signature) <b>/s/ James Stovall</b>	Name (Printed/Typed)	Date <b>MAR 12 2009</b>
Title <b>FIELD MANAGER</b>		
Office <b>CARLSBAD FIELD OFFICE</b>		

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Conditions of approval, if any, are attached.

**APPROVAL FOR TWO YEARS**

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

\*(Instructions on page 2)

**Roswell Controlled Water Basin**

**Approval Subject to General Requirements  
& Special Stipulations Attached**

**SEE ATTACHED FOR  
CONDITIONS OF APPROVAL**



DISTRICT I  
1625 N. FRENCH DR., HOBBBS, NM 88240

DISTRICT II  
1301 W. GRAND AVENUE, ARTESIA, NM 88210

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

DISTRICT IV  
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number 30-015-37085	Pool Code 39520	Pool Name Coco Hills QU-GB-SA
Property Code 305988	Property Name WLH G4S UNIT	Well Number 45
OCRID No. 143199	Operator Name ENERVEST OPERATING	Elevation 3493'

Surface Location

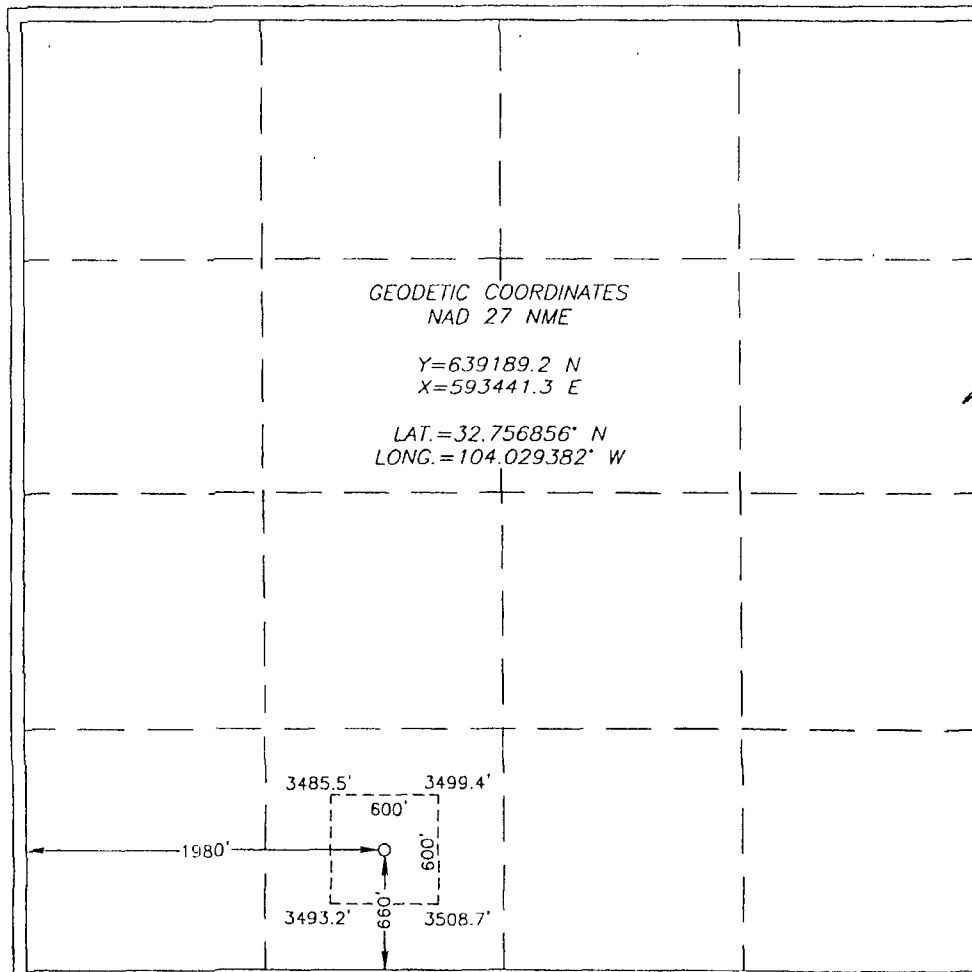
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	12	18-S	29-E		660	SOUTH	1980	WEST	EDDY

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 40 5307.73	Joint or Infill Yes	Consolidation Code U	Order No. R-2178
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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 that the information 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 mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature: [Signature] Date: 3-10-09  
Printed Name: Gary Miller Agent

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.

Date Surveyed: [Signature] JC  
Signature & Seal of Professional Surveyor: [Signature] GARY G. EIDSON  
Certificate No. GARY EIDSON 12841  
RONALD J. EIDSON 3239



# 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



Administrative Order IPI-377  
June 22, 2010

Enervest Operating, L.L.C.  
1001 Fannin Street, Suite 800  
Houston, Texas 77002-3500

Attention: Ms. Shirley Galik

**RE: Injection Pressure Increase Request**

West Loco Hills Grayburg No. 4 Sand Unit (R-13128)  
Loco Hills; Queen-Grayburg-San Andres Pool (39520)  
Eddy County, New Mexico

Reference is made to your request on behalf of Enervest Operating, L.L.C. (OGRID 143199) received by the Division June 9, 2010, to increase the surface injection pressure limit on the sixteen (16) injection wells (Exhibit "A").

The Phase I injection wells were permitted to inject produced water into the unitized Grayburg formation and governed by Division Order No. R-13128 Case No. 14243 issued in May, 2009, and the maximum surface injection pressure was limited to 510 psi.

It is our understanding the wells in Exhibit "A" need additional surface injection pressure to balance injection and withdrawal rates in order to optimize waterflood operations. The basis for granting these pressure increases are the sixteen step rate tests run by Cardinal Surveys Company in May and June 2010.

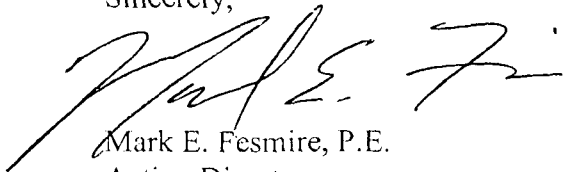
Enervest Operating, L.L.C. is hereby authorized to utilize the maximum surface injection pressures on the wells shown below in Exhibit "A", provided the tubing, size, type, setting depths and perforation depths do not change, but is prohibited from injecting at pressures that would induce fracturing in individual wells.



This approval is subject to your being in compliance with all other Division rules, including but not limited to Division Rule 5.9.

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected fluid is not being confined to the injection zone or is endangering any fresh water aquifers, or is causing waste of oil and gas.

Sincerely,

A handwritten signature in black ink, appearing to read 'Mark E. Fesmire', written in a cursive style.

Mark E. Fesmire, P.E.  
Acting Director

MEF/tw

cc: Oil Conservation Division - Artesia  
File: R-13128

**Exhibit "A"**  
**Enervest Operating, L.L.C.**  
**West Loco Hills Grayburg No. 4 Sand**  
**Unit Injection Wells Phase I**  
**T8S, R30E, NMPM, Chaves County,**  
**NM**  
**Injection Pressure Increases**

Well	API	Top Perf	Bottom Perf	Maximum Surface Injection Pressure(psi)
W.L.H. Unit No. 32	30-015-36772	2659	2686	1,100
W.L.H. Unit No. 33	30-015-37019	2614	2640	1,206
W.L.H. Unit No. 34	30-015-37017	2626	2645	870
W.L.H. Unit No. 35	30-015-36771	2630	2646	734
W.L.H. Unit No. 37	30-015-37021	2670	2696	1,404
W.L.H. Unit No. 38	30-015-37022	2654	2672	1,466
W.L.H. Unit No. 39	30-015-36769	2684	2714	996
W.L.H. Unit No. 41	30-015-37023	2680	2702	1,020
W.L.H. Unit No. 42	30-015-37026	2658	2684	804
W.L.H. Unit No. 44	30-015-37027	2678	2692	826
W.L.H. Unit No. 45	30-015-37025	2670	2694	880
W.L.H. Unit No. 48	30-015-37018	2653	2683	1,418
W.L.H. Unit No. 49	30-015-37015	2652	2676	1,104
W.L.H. Unit No. 50	30-015-37014	2639	2665	1,100
W.L.H. Unit No. 51	30-015-37013	2614	2640	1,398
W.L.H. Unit No. 53	30-015-37016	2642	2671	1,194

1/02