Susana Martinez
Governor

John Bemis
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey
Division Director
Oil Conservation Division

Administrative Order - Gas Storage Well
August 23, 2012

ADMINISTRATIVE ORDER
OF THE OIL CONSERVATION DIVISION

Under the provisions of 19.15.26.8B NMAC and of Division Order R-11611-B issued in Case No. 14518, Enstor Grama Ridge Storage and Transportation, L.L.C. seeks an administrative order to utilize its GRM Unit Well No. 8 (API 30-025-39922) located 126 feet from the South line and 1048 feet from the East line, Unit letter P of Section 4, Township 22 South, Range 34 East, NMPM, Lea County, New Mexico, for gas storage purposes.

THE DIVISION DIRECTOR FINDS THAT:

The application has been duly filed under the provisions of 19.15.26.8B NMAC and satisfactory information has been provided that affected parties as defined in said rule have been notified and no objections have been received within the prescribed waiting period. The applicant has presented satisfactory evidence that all requirements prescribed in 19.15.26.8 NMAC have been met and the operator is in compliance with 19.15.5.9 NMAC.

IT IS THEREFORE ORDERED THAT:

The applicant, Enstor Grama Ridge Storage and Transportation, L.L.C., is hereby authorized to utilize its GRM Unit Well No. 8 (API 30-025-39922) located 126 feet from the South line and 1048 feet from the East line, Unit letter P of Section 4, Township 22 South, Range 34 East, NMPM, Lea County, New Mexico, for gas storage into the Morrow formation through a perforated interval from 12811 feet to 13030 feet through carbon steel tubing and a packer set within 100 feet of the permitted interval. As allowed in Division Order R-11611-B, the Division director may administratively approve alternate packer setting depths, exceeding this tolerance, for good cause shown.

IT IS FURTHER ORDERED THAT:

The operator shall take all steps necessary to ensure that the gas to be stored enters only the permitted interval and is not permitted to escape to other formations or onto the surface.

After installing tubing, the casing-tubing annulus shall be loaded with an inert fluid and equipped with a pressure gauge or an approved leak detection device in order to determine leakage in the casing, tubing, or packer. The casing shall be pressure tested from the surface to the packer setting depth to assure casing integrity.

The well shall pass an initial mechanical integrity test ("MIT") prior to initially commencing use for storage and prior to resuming gas storage each time the packer is unseated. All MIT testing procedures and schedules shall follow the requirements in Division Rule 19.15.26.11A. NMAC. The Division Director retains the right to require at any time wireline verification of completion and packer setting depths in this well.

Per Division Order R-11611-B, the wellhead pressure on this well shall be limited to **no more than 5000 psi**. In addition, the well shall be equipped with a pressure limiting device in workable condition which shall, at all times, limit surface tubing pressure to the maximum allowable pressure for this well. Any increase in this pressure limit shall be governed by the provisions of Ordering Paragraph (7) of Division Order R-11611-B.

The operator shall notify the supervisor of the Division's district office of the date and time of the installation of injection equipment and of any MIT test so that the same may be inspected and witnessed. The operator shall provide written notice of the date of commencement of gas storage to the Division's district office. The operator shall submit monthly reports of the gas storage operations on Division Form C-131-A, in accordance with Division rules.

Without limitation on the duties of the operator as provided in Division Rules 19.15.29 and 19.15.30 NMAC, or otherwise, the operator shall immediately notify the Division's district office of any failure of the tubing, casing or packer in the well, or of any leakage or release of water, oil or gas from around any produced or plugged and abandoned well in the area, and shall take such measures as may be timely and necessary to correct such failure or leakage.

The gas storage authority granted under this order is not transferable except upon division approval. The division may require the operator to demonstrate mechanical integrity of any well that will be transferred prior to approving transfer of authority for use in gas storage operations.

The division may revoke this injection permit after notice and hearing if the operator is in violation of 19.15.5.9 NMAC.

Compliance with this order does not relieve the operator of the obligation to comply with other applicable federal, state or local laws or rules, or to exercise due care for the protection of fresh water, public health and safety and the environment.

Jurisdiction is retained by the Division for the entry of such further orders as may be necessary for the prevention of waste and/or protection of correlative rights or upon failure of the operator to conduct operations (1) to protect fresh or protectable waters or (2) consistent with the requirements in this order, whereupon the Division may, after notice and hearing, terminate the disposal authority granted herein.

JAMI BAILEY
Director

JB/wvjj

cc: Oil Conservation Division – Hobbs
State Land Office – Oil, Gas, and Minerals Division
Bureau of Land Management – Carlsbad Field Office
File: Case No. 14518 and API No. 30-025-39922

DATE IN 7/24/12	SUSPENSE	ENGINEER Examiner	LOGGED IN 7/25/12	TYPE ~~PMX~~	APP NO. PKVR1220731064

ABOVE THIS LINE FOR DIVISION USE ONLY

234255 Enstor Grand Ridge Storage and Transportation
30-025-39922
GRM Unit # 8
ULP 4 22S 34E

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

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: ***Administrative Approval for the addition of injection wells to the Storage Project without notice and hearing, granted per Order No. R-11611-B; Case No. 14518.***

[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 (**NOTE: Refer to Ordering Paragraph (1) of R-11611-B**)

[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.

Daryl W. Gee		Director	07/24/12
Print or Type Name	Signature	Title	Date

daryl.gee@enstorinc.com
e-mail Address

ENSTOR

RECEIVED OCD
2012 JUL 23 P 12:53

July20, 2012

5-000 psi

David K. Brooks & William V. Jones
New Mexico Energy, Minerals and Natural Resouces Department
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

GRM UNIT #8
30-025-39922
P/4/22S/34E
126 FSL/1048 FEL
(No Logs)

RE: Enstor Grama Ridge Storage and Transportation, LLC
C-108, Application for Authorization to Inject
Well – Grama Ridge Morrow Unit No 8 (API#30-025-3992)
Grama Ridge Storage Project – Lea County, New Mexico
Case No. 14518; Order No. R-11611-B

Dear Sirs:

Reference is made to Case No. 14518; Order No. R-11611-B, Ordering Paragraph (1)(iii) "*the authorization of an administrative procedure for the addition of injection wells to the Storage Project without notice and hearing, is hereby granted.*" Therefore, Enstor Grama Ridge Storage and Transportation, LLC ("Enstor") hereby submits the enclosed C-108 Application for Authorization to Inject for its Grama Ridge Morrow Unit No. 8 Well, located 126' FSL and 1,048' FEL of Section 4, Township 22S, Range 34E, Lea County, New Mexico.

The subject well is located on lands owned by the United States Department of the Interior (Bureau of Land Management) and a copy of the BLM-Accepted Well Completion or Recompletion Report and Log (Sundry 3160-4) is also attached for reference.

Pursuant to the Ordering Paragraph citation referenced above, Enstor requests that this well be identified by and placed into commercial injection service by the Oil Conservation Division.

20329 State Highway 249, Suite 400, Houston, TX 77070
Telephone (281) 374-3050
www.enstorinc.com

Should you have any questions, please contact the undersigned directly at (281) 374-3062 or by email at daryl.gee@enstorinc.com

Very Truly Yours,

ENSTOR GRAMA RIDGE STORAGE AND TRANSPORTATION, LLC

By: Daryl W. Gee
Director
Enstor Operating Company, LLC,
the manager of Caledonia Energy Partners, L.L.C.

Enclosures: C-108 Grama Ridge Morrow Unit No. 8
BLM Sundry – Form 3160-4

CC: Oil Conservation Division – Hobbs (District 1)

C108 APPLICATION FOR AUTHORIZATION TO INJECT

GRM UNIT NO. 008
API# 30-025-39922
OGRID# 234255

Prepared for:

State of New Mexico Energy, Minerals and Natural Resources Department

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

Prepared by:

ENSTOR

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 _____Disposal ___X___Storage
Application qualifies for administrative approval? _____Yes _____No

II. OPERATOR: ENSTOR Grama Ridge Storage and Transportation, LLC

ADDRESS: 20329 State Highway 249, Suite 400, Houston, TX 77070

CONTACT PARTY: Daryl W. Gee PHONE: 281-374-3062

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 ___X___No
If yes, give the Division order number authorizing the project: R-11611-B

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 Attachment V***

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 Attachment VI***

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected; ***N/A***
2. Whether the system is open or closed; ***N/A***
3. Proposed average and maximum injection pressure; ***See Attachment VII***
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and, ***N/A***
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.). ***N/A***

*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 Attachment VIII***

IX. Describe the proposed stimulation program, if any. ***N/A***

*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).
Well Logs have been submitted to OCD District Office (Hobbs, NM)

*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. ***Only one water well falls within the 1-mile radius from the subject well. The chemical analysis from this water well is attached (See Attachment XI).***

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. ***N/A***

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form. ***Per Order R-11611-B, Ordering Paragraph (1)(iii) "the authorization of an administrative procedure for the addition of injection wells to the Storage Project without notice and hearing, is hereby granted."***

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: Daryl W. Gee TITLE: Director, Regulatory Affairs& Land Management
SIGNATURE: _____ DATE: 7/20/12

E-MAIL ADDRESS: daryl.gee@enstorinc.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.

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.

Attachment III

Grama Ridge Morrow Unit #8 (OGRID #234255)
Well Information

API #	30-025-39922			
Location:	Unit Letter: P	Section 4, Township 22S, Range 34E	208'FSL 1,103'FEL	Lea County, NM

WELL CONSTRUCTION DATA

	Hole Size (in)	Casing Size	Cemented with (sxs)	Depth Set (ft)	Top of Cement	Method Determined
Conductor	26"	20" 0.375wt X52	125 sxs	60'	Surface	Visual
Surface Casing	17.5"	13-3/8" 54.5wt J55	1,475 sxs	1,779'	Surface	Visual
Intermediate Casing	12.25"	9-5/8" 40.0wt N80	2,110 sxs	5,610'	Surface	Visual
Production Casing	8.75"	7.0" 29.0wt P110	1,480 sxs	11,450'	top 3,723'	Temp Survey
Liner	6-1/8"	4-1/2" 13.5ppf P110		11,224'-13,456'	into 7"	CBL

INJECTION WELL DATA

Tubing Size:	4-1/2" 15.5ppf L80 BTS-6 Conn. to 10,992' X 2-7/8", 6.5 ppf, L80 Ultra FJ tubing from 10,992'-12,717'
Liner Hanger:	4-1/2" TIW IB-SC RRP Liner Hanger w/LX Liner Top Packer & Tie-Back (Full Bore)
Packer:	Baker FA 30
Packer Setting Depth:	12,717'

Additional Data

(1) Is this a new well drilled for injection? **Yes**

(2) Injection Formation: **Morrow Clastics**

3) Name of Field or Pool (if applicable) **Grama Ridge, Morrow**

(4) Has the well ever been perforated in any other zone(s)? **No, this is a new well.**

(5) Give the name and depths of any oil and gas zones underlying or overlying the proposed injection zone in this area: **None are known.**

(6) Perforations

Morrow "A" 12,811'-12,856'
Morrow "B" 12,920-12,937'
Morrow "C" 12,960'-12,966; 12,976'-12,987'; 13,000'-13,030'

GRAMA RIDGE STORAGE (5/5/12)
GRMU # 8

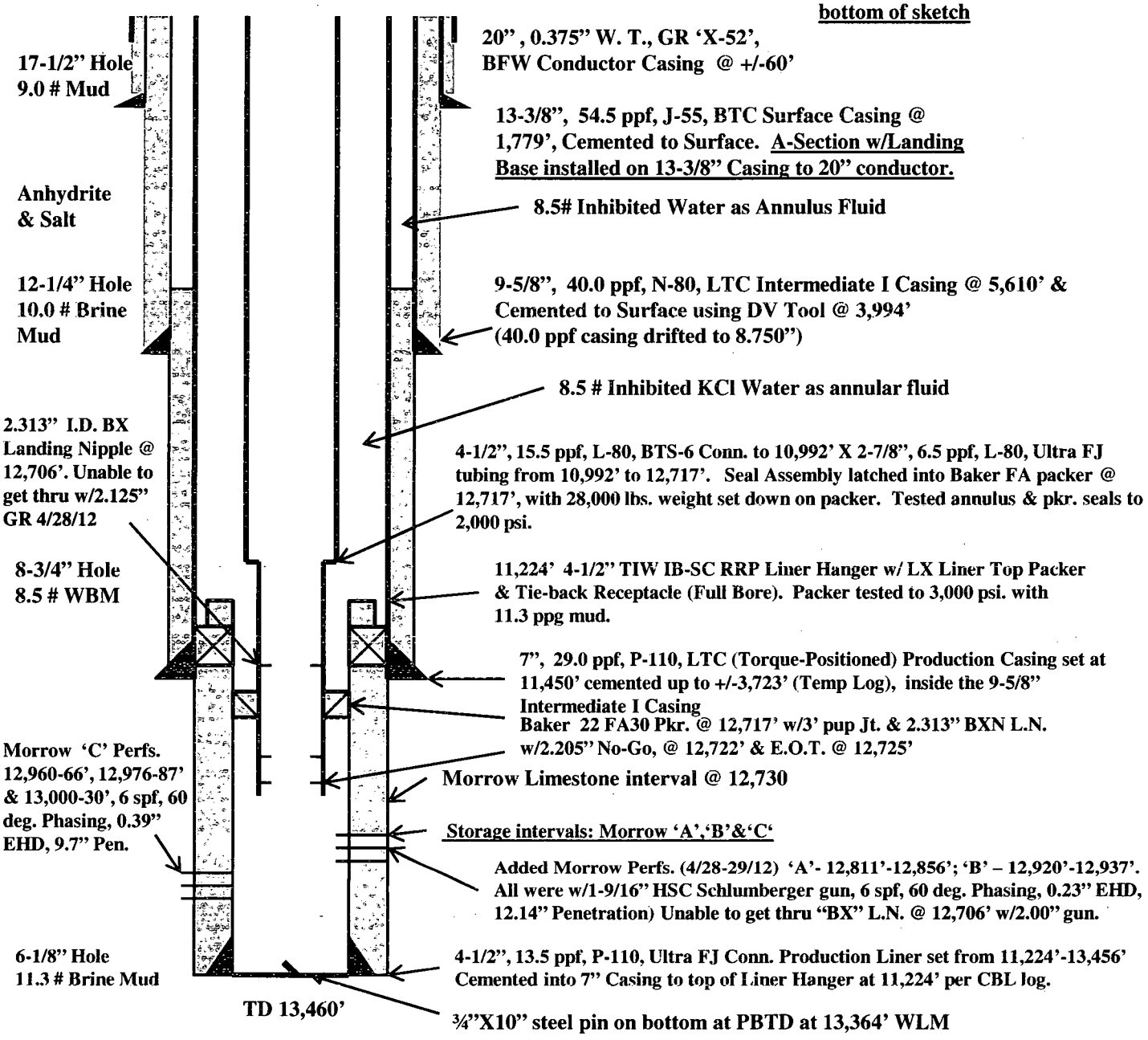
Section 4 , T22S, R34E, 126' FSL, 1,048' FEL, Lea County, NM

Spud: 11/2/10
TD: 1/21/11

Gr. Elev.: 3,597'
RKB: 26'

FINAL COMPLETION 4/29/12 API Number: 30-025-39922

See Wellhead data at bottom of sketch

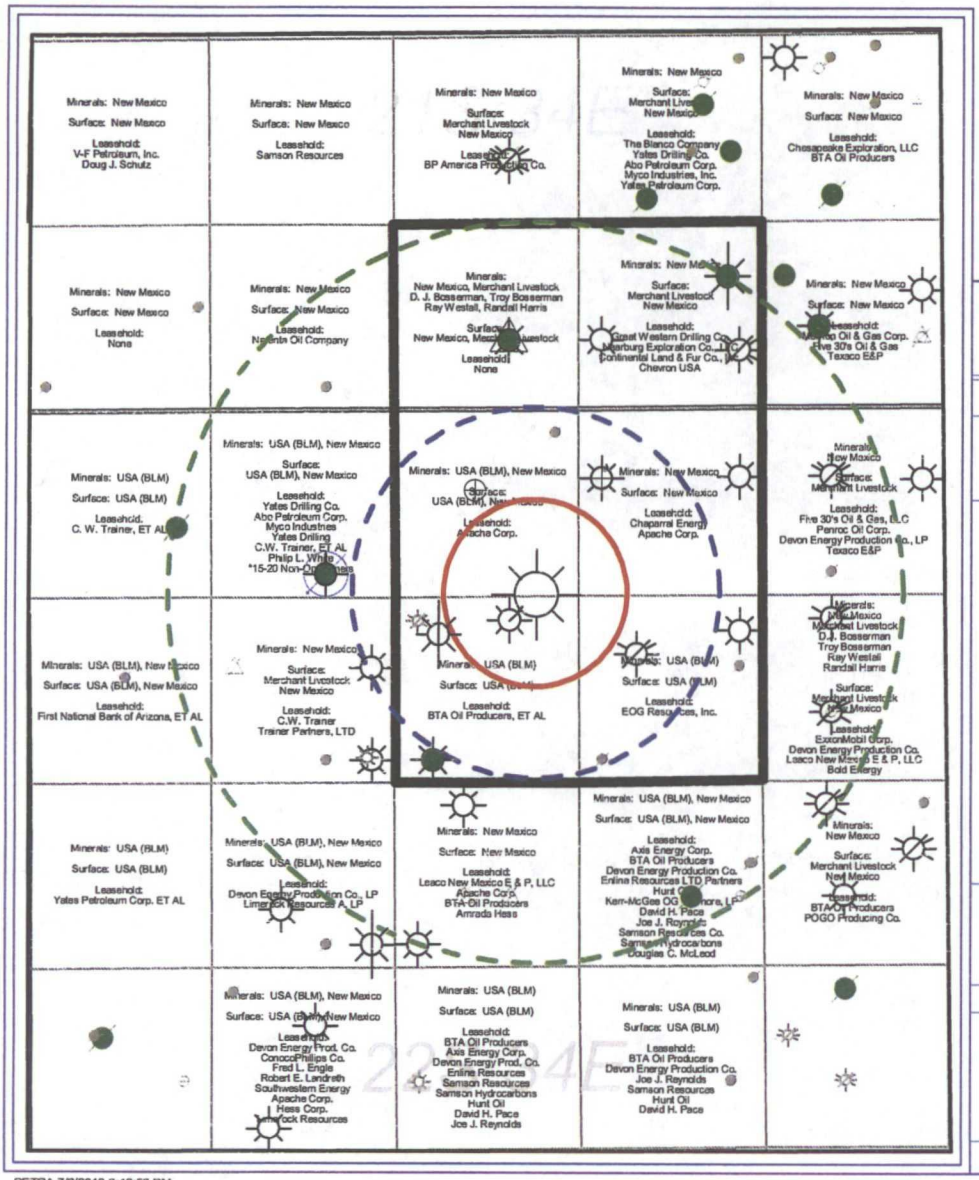


Cameron Wellhead:
'A' Sect.: 13-3/8" SOW X 13-5/8", 3k
'B' Sect.: 13-5/8", 3k X 11", 5k Csg Spool w/ 2-1/16", 5k casing valve
Tbg. Spool: 11", 5k X 7-1/16", 10k w/two 1-13/16" valves;
Tbg. Hanger: 7" X 4-1/2", 10k w/15.5 ppf, BTS-6, B X B threads w/4" Type 'H' BPV Threads;
Tree: two (2) 7-1/16", 10k Master Valves, 7-1/16", 10k X 7-1/16", 10k cross (7-1/16" X 4-1/16" 10k adapter on top of cross w/Tree Cap w/4-1/2", 8rd lift thread) w/two 4-1/16" wings w/4-1/16", 10k gate valves & 4-1/16", 10k actuated gate valves on each wing. See Cameron Dwg. C5633.

Essex Energy Storage Services, Inc.

Revised 5/5/12

Attachment V



ENSTOR

Grama Ridge Morrow Unit Injection Well

LEASES

GRMU #8

WELL SYMBOLS

- Plugged & Aband. Oil
- Aband. SWD
- Oil Well
- Gas Well
- Dry Hole
- Temp. Abandoned
- Plugged & Aband. Gas
- Oil & Gas Well
- Injection Well
- Abandoned Loc
- Service Well
- Unknown Status
- Abandoned Well
- LOC

Solid Red Circle = 1/2-Mile Radius
Dashed Blue Circle = 1-Mile Radius
Dashed Green Circle = 2-Mile Radius
Solid Black Rectangle = GRMU Boundary

By: Vicki V. Devine

Ratio Scale = 1 : 64,000

0 5,000

FEET

July 3, 2012

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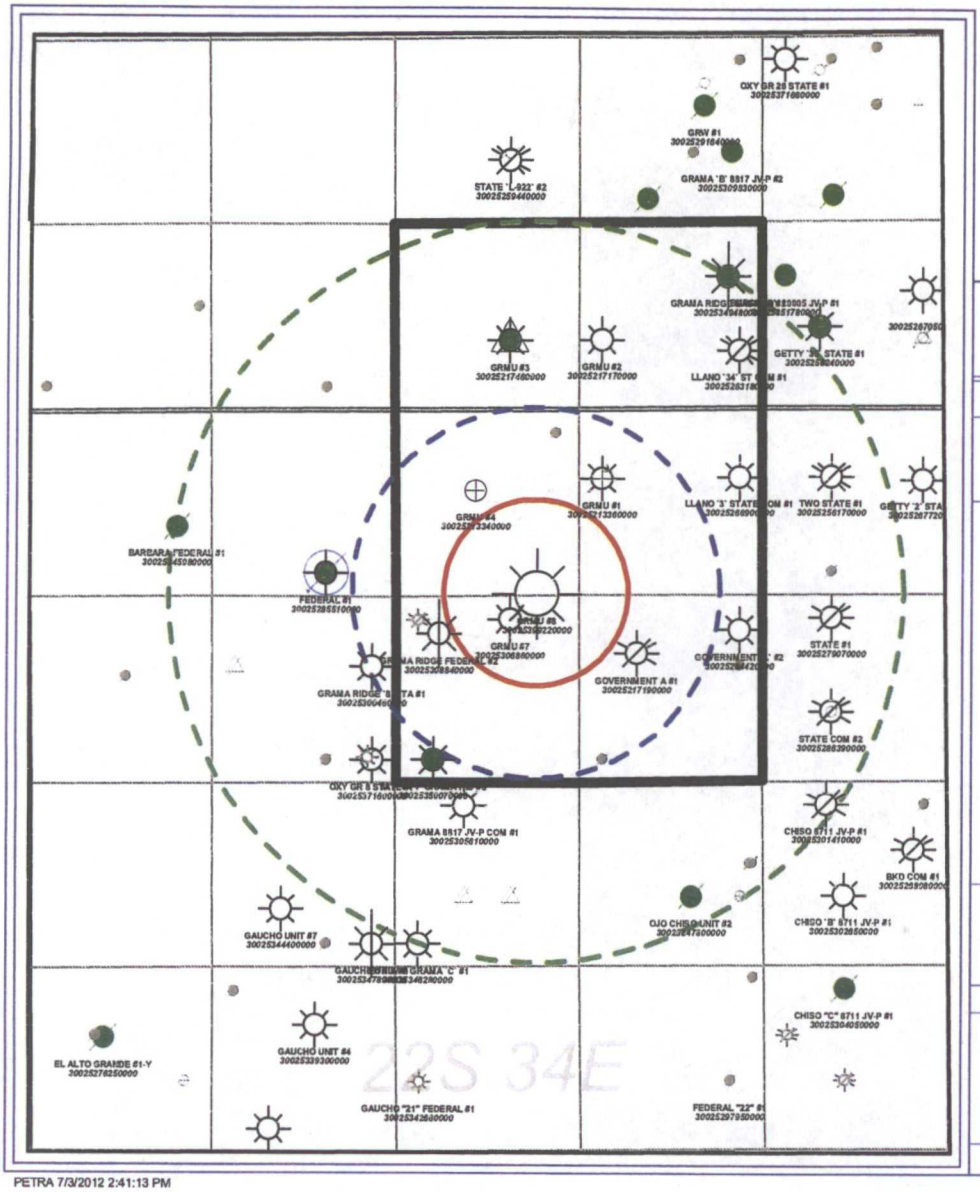
Attachment V



ENSTOR

Grama Ridge Morrow Unit Injection Well

WELLS

GRMU #8

WELL SYMBOLS

- Plugged & Aband. Oil
- Aband. SWD
- Oil Well
- Gas Well
- Dry Hole
- Temp. Abandoned
- Plugged & Aband. Gas
- Oil & Gas Well
- Injection Well
- Abandoned Loc
- Service Well
- Unknown Status
- Abandoned Well
- LOC

Solid Red Circle = 1/2-Mile Radius
Dashed Blue Circle = 1-Mile Radius
Dashed Green Circle = 2-Mile Radius
Solid Black Rectangle = GRMU Boundary

By: Vicki V. Devine

Ratio Scale = 1 : 64,000

0 5,000

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July 3, 2012

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Attachment VI

Name	UWI/API	Type	Status	Location				Date	Activity	Depth	Record of Completion			
				Twn	Rng	Sec	Spot			TD	Top	Base	Type	Formation
Grama Ridge Federal, 8817 JV-P, #1	30-025-30686-0000	Misc. Natural Gas Storage Well	Active	22S	34E	9	NW NE	Oct-89	Spud date	13,350				
								Dec-89	Perforations - RFT measured Morrow "A" as depleted - No stimulation recorded in Morrow "C" - Morrow "C" at virgin pressure		13,019	13,039	Active	Morrow "C"
								Jun-95	Added perforations - Isolated from Morrow "C" with OTIS perm packer @12,955'		12,677	12,686	Active	Morrow Lime
								Jul-97	Added perforations to tailpipe in packer @12,955'		12,955	12,955	Active	Morrow "C"
								May-00	Added perforations/Co-mingled all zones		12,686	12,699	Active	Morrow Lime
											12,844	12,848	Active	Morrow "A"
								Dec-09	Conversion to Natural Gas Storage Well - Morrow Lime Squeezed perforations (12,677-12, 699') - CIBP set at 13,119' above previous Morrow 'C' perfs					
									- Added Perforations		12,828	12,862	Active	Morrow A
									- Added Perforations		13,015	13,057	Active	Morrow C

Attachment VII

3.	Proposed Average Injection Surface Pressure:	3850 psi
	Proposed Maximum Injection Surface Pressure:	5000 psi

Attachment VIII

Geological Summary

The Morrow Clastics in the Grama Ridge Storage Unit comprise four stratigraphic sequences, commonly referred to as Morrow 'A' through 'D'. Within the Unit, sandstones can be developed in all zones, however porosity and permeability, and even the presence or absence of sand, vary widely between wells.

The sandstones in the Morrow at Grama Ridge were deposited during base-level rise into incised valleys cut into the marine Morrow shale during the previous sea level low-stand. Flooding of the valleys resulted in dip-oriented channel-fill sandstones, along with more strike-oriented deltaic and estuarine-marine sandstones. The sandstones are 10 to 30 feet thick, discontinuous, and less than one mile wide.

The gas storage interval in the GRMU #8 (SE/4 SE/4 Section 4-T22S-R34E) includes the Morrow Clastics from 12,726 – 13200 feet (see cross section in Attachment 8). Within the storage interval the Morrow 'A' (12,811 - 12856), Morrow 'B' (12,920 -12,937), and Morrow 'C' (12,960 - 12,966; 12,976 – 12,987; 13,000 – 13030) will be injected. The Morrow 'D' has insufficient porosity.

A summary of the target injection intervals in the GRMU #8 follows:.

Morrow 'A':

- Depth: 12808-12904
- Zone Thickness: 96 feet
- Lithology: 2 shaley sandstones 2 to 27 feet thick separated by shale
- Gross 'A' Sandstone: 2 feet (using a normalized GR cutoff of 60 API)
- Net 'A' Sandstone: 1 foot (Gross SS with >=6% Porosity)

Morrow 'B'

- Depth: 12904-12960
- Zone Thickness: 56 feet
- Lithology: 2 sandstones about 3 feet thick
- Gross 'B' Sandstone: 4.5 feet (using a normalized GR cutoff of 60 API)
- Net 'B' Sandstone: 3 feet (Gross SS with >=6% Porosity)

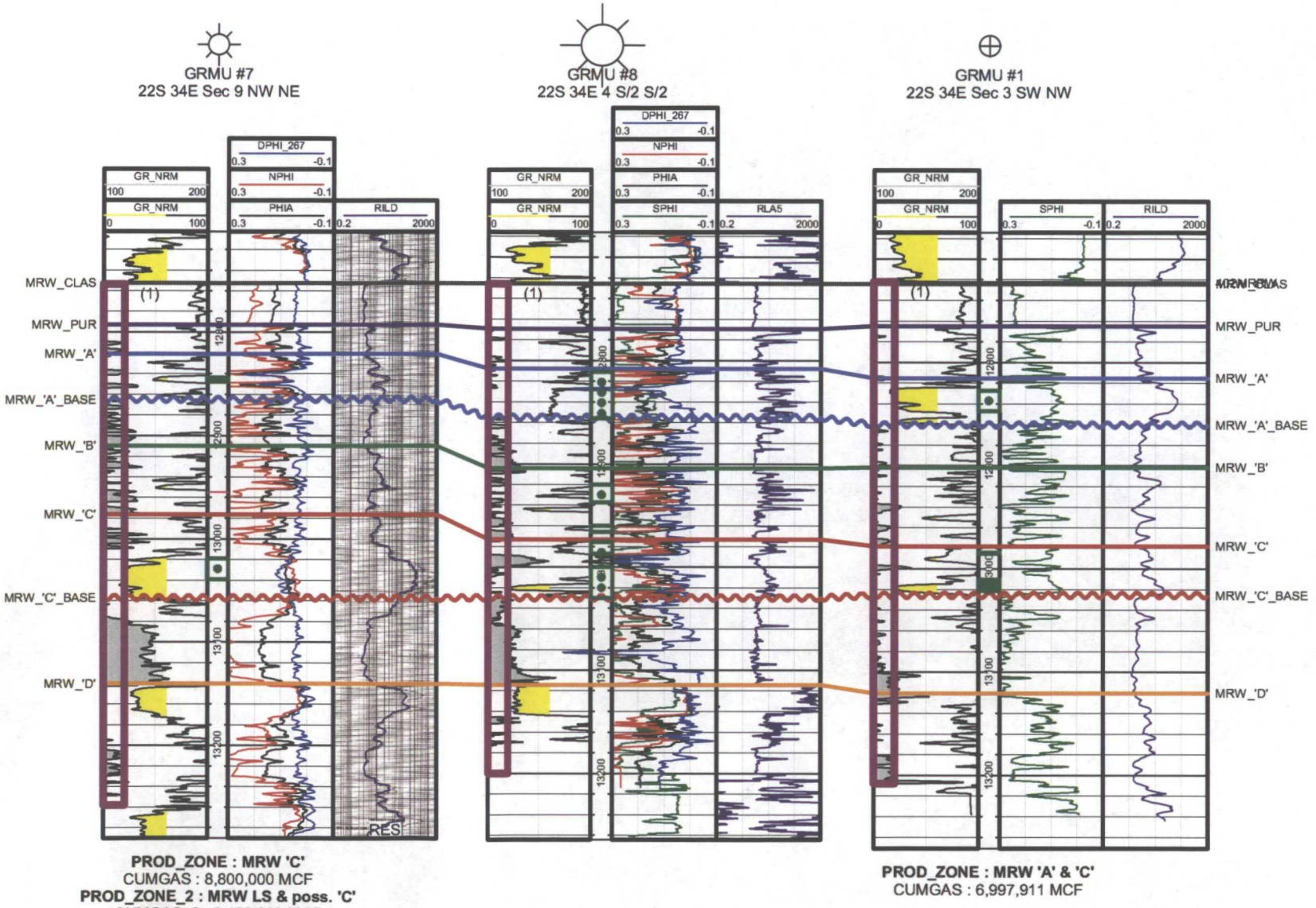
Morrow 'C'

- Depth: 12960-13030
- Zone Thickness: 70 feet
- Lithology: shaley to clean sandstones 2 to 10 feet thick
- Gross 'C' Sandstone: 8 feet (using a normalized GR cutoff of 60 API)
- Net 'C' Sandstone: 5 feet (Gross SS with >=6% Porosity)

The two (2) major groundwater aquifers found in the region of GRMU #8 are the Ogallala Formation/Aquifer and the Capitan Aquifer. The Ogallala is the primary aquifer in the southern portions of Lea County. The Ogallala consists of sand, silt, clay, and gravel. It is approximately 250 feet thick, and thins toward the southern portion of the County where the GRMU #8 is located. The Ogallala Aquifer is used for municipal, domestic, livestock, irrigation, oil and gas production, and other commercial and industrial purposes. Groundwater in the Ogallala Aquifer generally is of good quality, usually suitable for potable purposes. It can occur under unconfined conditions at depths of 50 feet or less, but typical depths of water wells in the Ogallala are 100 to 500 feet below ground surface (bgs). Water supply well GR-1/WW-1 installed at the Grama Ridge compressor station in 2007 is assumed to be completed in the Ogallala. The boring was advanced to a total depth of 109 ft., and groundwater was encountered at a depth of 62 ft. Attached is a summary report of an analysis of groundwater sampled from the well after it was completed.

The Capitan Aquifer also is an important source of groundwater in the southern portion of Lea County. The Capitan consists of dolomite and limestone strata that are part of the Capitan Reef Complex. Water quality from the Capitan generally is very poor. However, it is used extensively for mining, oil and gas production, livestock watering, and some industrial and domestic purposes. The total depth of wells in the Capitan generally is 500 to 1,000 feet.

There are no known water sources underlying the Morrow Clastics at this location.



PROD_ZONE : MRW 'C'
CUMGAS : 8,800,000 MCF
PROD_ZONE_2 : MRW LS & poss. 'C'
CUMGAS_2 : 2,100,000 MCF
PROD_ZONE_3 : MRW LS, 'A', & 'C'
CUMGAS_3 : 220,814 MCF

(1) Show: STORAGE INTERVAL 12754-13258

(1) Show: STORAGE INTERVAL 12726 - 13200

PROD_ZONE : MRW 'A' & 'C'
CUMGAS : 6,997,911 MCF

(1) Show: NM STORAGE INTERVAL 12722-13208

ENSTOR

GRAMA RIDGE PROJECT

MORROW CLASTICS

STORAGE INTERVALS

MORROW LS TO MORROW 'D'

Horizontal Scale = 652.8
Vertical Scale = 100.0
Vertical Exaggeration = 6.5x

LOG CURVES

0 100 GR_NRM CUTOFF = 60.00

100 200 GR_NRM CUTOFF = 100.00

0.3 -0.1 SPHI

0.3 -0.1 PHIA

0.3 -0.1 NPHI

0.3 -0.1 DPHI_267

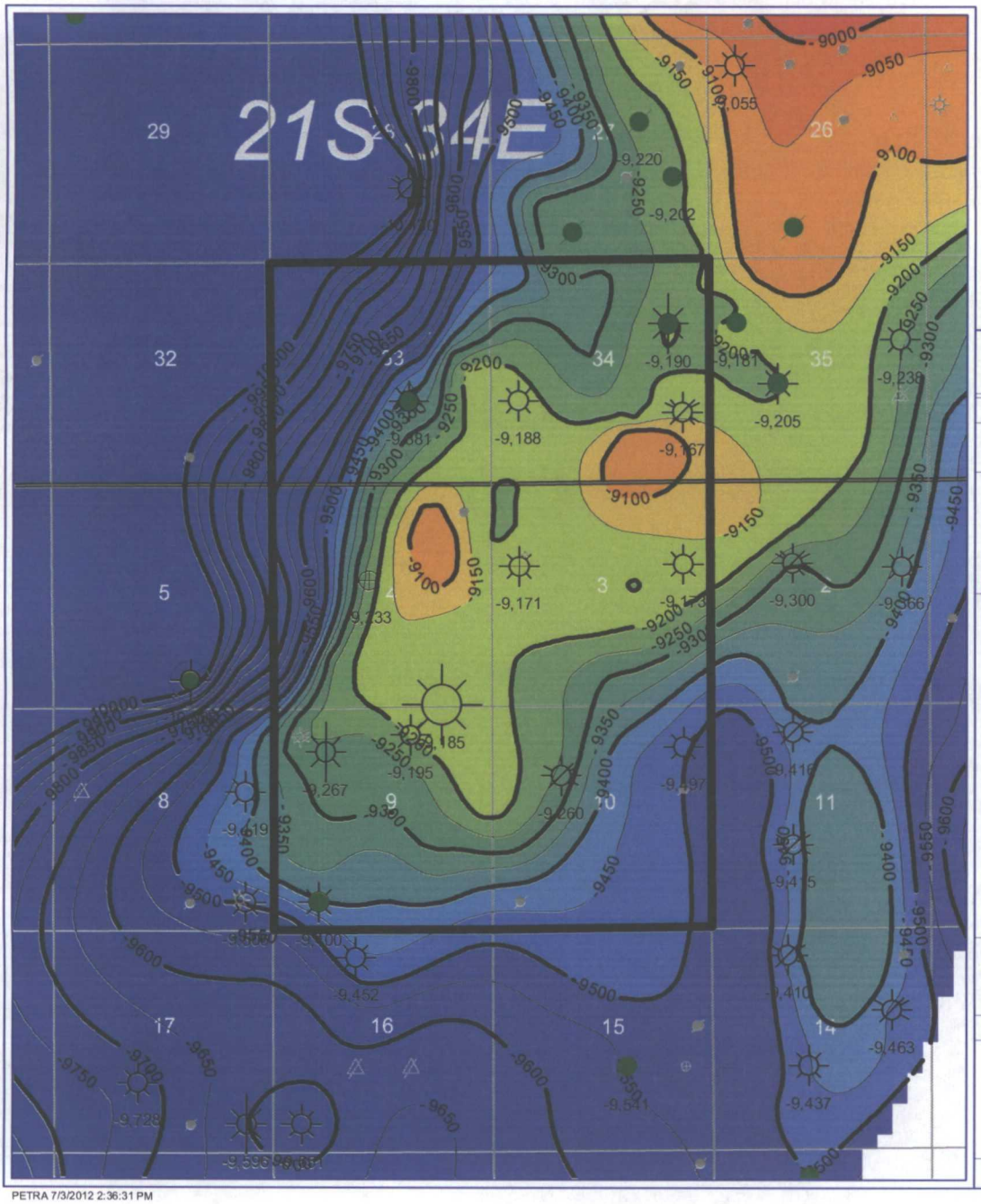
0.2 2,000 RT

By: Vicki V. Devine

July 3,2012 1:23 PM

HS=653

PETRA 7/3/2012 1:23:30 PM



ENSTOR

GRAMA RIDGE MORROW UNIT

STRUCTURE

TOP MORROW 'A'

POSTED WELL DATA

Top Morrow 'A' (SS) (F)

WELL SYMBOLS

- Plugged & Aband. Oil
- Aband. SWD
- Oil Well
- Gas Well
- Dry Hole
- Temp. Abandoned
- Plugged & Aband. Gas
- Oil & Gas Well
- Injection Well
- Abandoned Loc
- Service Well
- Unknown Status
- Abandoned Well
- LOC

REMARKS

post-3D seismic interpretation

Solid black rectangle: GRMU Boundary

By: Vicki V. Devine

Ratio Scale = 1 : 48,000

0 4,000

FEET

July 3, 2012

PETRA 7/3/2012 2:36:31 PM

P.O. BOX 98
MIDLAND, TX. 79702
PHONE (432) 683-4521

Martin Water Laboratories, Inc.

709 W. INDIANA
MIDLAND, TEXAS 79701
FAX (432) 682-8819

RESULT OF WATER ANALYSES

TO: Mr. Larry Khromer
20333 State Hwy 249, Suite 400, Houston, TX 77070

LABORATORY NO. 607-21
SAMPLE RECEIVED 5-31-07
RESULTS REPORTED 6-4-07

COMPANY Enstor LEASE Grama Plant
FIELD OR POOL
SECTION ____ BLOCK ____ SURVEY ____ COUNTY Lea STATE NM
SOURCE OF SAMPLE AND DATE TAKEN:
NO. 1 Drinking water - taken 5-31-07.
NO. 2 Maximum contents for drinking water as recommended by the Texas Dept. of Health.
NO. 3
NO. 4
REMARKS:

CHEMICAL AND PHYSICAL PROPERTIES	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.0020			
pH When Sampled				
pH When Received	7.45			
Bicarbonate as HCO_3	195			
Supersaturation as $CaCO_3$				
Undersaturation as $CaCO_3$				
Total Hardness as $CaCO_3$	168			
Calcium as Ca	48			
Magnesium as Mg	12			
Sodium and/or Potassium	34			
Sulfate as SO_4	30	300		
Chloride as Cl	36	300		
Iron as Fe	0.15	0.30		
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	355	1,000		
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen,				
Hydrogen Sulfide	0.0			
Resistivity, ohms/m at 77° F.	24.20			
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				
Nitrate, as N	4.0	10.0		

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks: Based on the determinations performed above, this water shows salt levels that comply with State Health Department standards for drinking water. However, coliform bacteria was present in the submitted sample and therefore this water should not be consumed.

Form No. 3

By _____
Greg Ogden, B.S.

LATHAM PRINTING CO. • 333-1202

Martin Water Laboratories, Inc.

Analysis & Consultants since 1953
Bacterial & Chemical Analysis

To: Mr. Larry Khromer
20333 State Hwy 249, Suite 400
Houston, TX 77070

Laboratory No. B607-31
Sample received 5-31-07
Sample reported 6-4-07

Company: Enstor
County: Lea, NM
Field:
Lease: Grama Plant

Subject: To determine the presence or absence of coliform bacteria.

Method: USEPA Equivalent Presence/Absence Method 8364
100 ml of sample is combined with premeasured and packaged media broth, incubated 48 hours at 35°C, and examined for yellow color, which indicates the presence of coliforms, or a red color, indicating a negative test.

Source of sample and date taken: Drinking water - taken 5-31-07.

Found (Present)	Not Found (Absent)
✔	

Remarks: These results show coliform bacteria to be present in the submitted water sample and therefore this water would not be acceptable for human consumption.

Greg Ogden, B.S.

(432) 683-4521 * 709 W. Indiana, Midland, Texas 79701 * (fax) 682-8819
Remit to Address: P.O. Box 98, Midland, Texas 79702
Visit our Website @: www.martinwaterlabs.com

Form 3160-4
(March 2012)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Operator Copy

FORM APPROVED
OMB NO. 1004-0137
Expires: October 31, 2014

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5. Lease Serial No.: NMNM 033312A

1a. Type of Well: ☐ Oil Well ☐ Gas Well ☐ Dry ☑ Other
b. Type of Completion: ☑ New Well ☐ Work Over ☐ Deepen ☐ Plug Back ☐ Diff. Resvr.
Other: Natural Gas Storage

6. If Indian, Allottee or Tribe Name:

7. Unit or CA Agreement Name and No.: 14-08-0001-14277 (NMNM 70953X)

2. Name of Operator: Enstor Grama Ridge Storage and Transportation, LLC

8. Lease Name and Well No.: Grama Ridge Morrow Unit No. 8

3. Address: 20329 State Highway 249, Suite 400, Houston, TX 77070

3a. Phone No. *(include area code)*: 281-374-3050

9. API Well No.: 30-025-39922

4. Location of Well *(Report location clearly and in accordance with Federal requirements)**

At surface: 126' FSL AND 1,048' FEL OF SEC 4, TOWNSHIP 22S, RANGE 34E

At top prod. interval reported below: 208' FSL and 1,103' FEL

At total depth: 213' FSL and 1,107' FEL

10. Field and Pool or Exploratory: Morrow Formation, Grama Ridge

11. Sec., T., R., M., on Block and Survey or Area: Sec 4, T-22S, R-34E

12. County or Parish: Lea County

13. State: NM

14. Date Spudded	15. Date T.D. Reached	16. Date Completed	17. Elevations (DF, RKB, RT, GL)*
11/02/2010	01/21/2011	☐ D & A ☐ Ready to Prod. 05/05/2012	3,623' RKB

18. Total Depth:	19. Plug Back T.D.	20. Depth Bridge Plug Set:
MD 13,460' TVD 13,458'	MD 13,367' TVD 13,365'	MD TVD

21. Type Electric & Other Mechanical Logs Run (Submit copy of each)
Platform Express, Caliper, Temperture, CBL, Casing Inspection

22. Was well cored? ☑ No ☐ Yes (Submit analysis)
Was DST run? ☑ No ☐ Yes (Submit report)
Directional Survey? ☐ No ☑ Yes (Submit copy)

23. Casing and Liner Record *(Report all strings set in well)*

Hole Size	Size/Grade	Wt. (#/ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sks. & Type of Cement	Slurry Vol. (BBL)	Cement Top*	Amount Pulled
26"	20"/X52	0.375"wt	0'	60'	NA	125 sks	30	surface (CIR)	NA
17-1/2"	13-3/8"/J5	54.5	0'	1,779'	NA	1,475 sks	432	surface (CIR)	NA
12-1/4"	9-5/8"/N80	40.0	0'	5,610'	3,994'	2,110 sks	641	surface (CIR)	NA
8-3/4"	7-0"/P110	29.0	0'	11,450'	NA	1,480 sks	459	3,723' (TS)	NA
6-1/8"	4-1/2"/P110	13.5	11,224'	13,456'	NA	211 sks	63	11,224' (CBL)	NA

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
4-1/2"	10,992'		2-7/8"	12,717'				

25. Producing Intervals / 26. Perforation Record

Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A) Morrow A	12,810'	12,856'	12,811'-12,856'	0.23"	270	open
B) Morrow B	12,903'	12,937'	12,920'-12,937'	0.23"	102	open
C) Morrow C	12,960'	13,030'	12,960'-66',12,976'-87', and	0.39"	102	open
D)			13,000'-13,030'	0.39"	180	open

27. Acid, Fracture, Treatment, Cement Squeeze, etc.

Depth Interval	Amount and Type of Material
12,960'-66', 12,976'-87', and	2,000 gal Methanol/Acedic Acid
13,000'-30'	55,000 gal LPG frac, 40,000 lbs versa prop

RECLAMATION DUE 11-5-12

28. Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status

28a. Production - Interval B

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status

ACCEPTED FOR RECORD
JUN 16 2012
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

*(See instructions and spaces for additional data on page 2)

28b. Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
03/08/11	03/10/11	3	→					0.59	Flowing

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status
8/64"	261		→		87			Shut-in

28c. Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status
			→					

29. Disposition of Gas *(Solid, used for fuel, vented, etc.)*
flared and vented

30. Summary of Porous Zones (Include Aquifers):

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.

31. Formation (Log) Markers
Please see the attached list.

Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top Meas. Depth
Rustler	1,702'	2,185'	Anhydrite, halite, shale		
Salado	2,185'	3,756'	Halite, anhydrite, shale		
Yates	4,045'	4,372'	Anhydrite, limestone, shale		
Capitan	4,372'	5,520'	limestone, shale		
Bell Canyon	5,520'	5,864'	limestone, shale		
Cherry Canyon	5,864'	7,131'	limestone, sandstone, shale		
Brushy Canyon	7,131'	8,442'	limestone, sandstone, shale		
Bone Spring	8,442'	11,238'	sandstone, limestone, shale		
Wolfcamp	11,238'	11,618'	limestone, shale		
Strawn	11,618'	11,916'	limestone, shale		
Atoka	11,916'	12,497'	limestone, shale		
Morrow Limestone	12,497'	12,726'	limestone, shale		
Morrow Clastics	12,726'	13,365'	sandstone, shale		

32. Additional remarks (include plugging procedure):

Please see attached wellbore schematic.

33. Indicate which items have been attached by placing a check in the appropriate boxes:

☑ Electrical/Mechanical Logs (1 full set req'd.) ☐ Geologic Report ☐ DST Report ☑ Directional Survey
☐ Sundry Notice for plugging and cement verification ☐ Core Analysis ☐ Other:

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions)*

Name *(please print)* Daryl W. Gee Title Director, Regulatory Affairs and Land Management

Signature Date June 7, 2012

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.

(Continued on page 3)

MS Energy Services

Job Number: SVCO-110070
Company: Essex Energy Storage Services
Lease/Well: Grama Ridge Storage 8
Location: Lea County, NM
Rig Name: Acacia #9
RKB: 27'
G.L. or M.S.L.: GL

State/Country: New Mexico/USA
Declination: 7.54°
Grid: East To Grid
File name: F:\SURVEY\2011SU~1\ESSEX\GRAMA8.SVY
Date/Time: 24-Jan-11 / 08:40
Curve Name: 9200' - 13380' M.D. (Gyroscopic)

WINSERVE SURVEY CALCULATIONS
Minimum Curvature Method
Vertical Section Plane .00
Vertical Section Referenced to Wellhead
Rectangular Coordinates Referenced to Wellhead

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	CLOSURE Direction Deg	Dogleg Severity Deg/100
9030.00	2.50	280.54	9028.53	60.00	-35.22	60.00	69.57	329.59	.00
Tied Gyroscopic Surveys Into Previous Gyroscopic Surveys									
9200.00	3.25	276.94	9198.31	61.26	-43.65	61.26	75.22	324.53	.45
9400.00	1.75	297.07	9398.12	63.34	-52.00	63.34	81.95	320.62	.86
9600.00	.25	216.68	9598.09	64.38	-54.98	64.38	84.66	319.50	.86
9800.00	.25	237.30	9798.09	63.79	-55.60	63.79	84.62	318.92	.04
10000.00	.25	220.92	9998.09	63.22	-56.26	63.22	84.63	318.34	.04
10200.00	.25	217.54	10198.08	62.55	-56.81	62.55	84.50	317.75	.01
10400.00	.25	208.76	10398.08	61.82	-57.28	61.82	84.28	317.18	.02

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	CLOSURE Direction Deg	Dogleg Severity Deg/100
10600.00	.50	60.98	10598.08	61.86	-56.73	61.86	83.94	317.48	.36
10800.00	.25	91.20	10798.08	62.28	-55.53	62.28	83.44	318.28	.16
11000.00	.25	138.42	10998.07	61.94	-54.81	61.94	82.71	318.50	.10
11200.00	.50	151.64	11198.07	60.85	-54.10	60.85	81.42	318.36	.13
11400.00	.50	132.91	11398.06	59.48	-53.05	59.48	79.70	318.27	.08
11600.00	.50	49.13	11598.06	59.46	-51.75	59.46	78.83	318.97	.33
11800.00	1.25	65.35	11798.03	60.94	-49.11	60.94	78.26	321.14	.39
12000.00	1.25	24.31	11997.99	63.84	-46.23	63.84	78.82	324.09	.44
12200.00	1.50	343.04	12197.94	68.33	-46.09	68.33	82.42	326.00	.50
12400.00	1.00	331.76	12397.89	72.37	-47.68	72.37	86.67	326.62	.28
12600.00	1.25	317.49	12597.85	75.52	-49.98	75.52	90.56	326.50	.19
12800.00	1.25	324.01	12797.80	78.89	-52.74	78.89	94.89	326.24	.07
13000.00	1.00	324.72	12997.76	82.08	-55.03	82.08	98.82	326.16	.13
13200.00	1.00	310.39	13197.73	84.64	-57.36	84.64	102.24	325.87	.12
Last Survey Depth Recorded									
13380.00	1.00	328.69	13377.71	87.00	-59.38	87.00	105.33	325.69	.18

Client : NGAS - Essex
Well : Grama Ridge Unit 8
Location : Lea Co, NM
License :

Page: 1
Date : 12/16/2010
File :

UWI #:

Vertical Section Calculated Along Azimuth 0.00°
KB Elevation = 0.00ft

	MD ft	Inc deg	Azi deg	TVD ft	North ft	East ft	V'Sect ft	D'Leg °/100	Build °/100	Turn °/100
				Start Gyro						
0	200.00	0.25	330.45	200.00	0.38	-0.22	0.38	0.00	0.00	0.00
1	400.00	0.50	329.40	400.00	1.51	-0.88	1.51	0.13	0.13	-0.53
2	600.00	0.75	310.35	599.98	3.11	-2.32	3.11	0.16	0.12	-9.52
3	800.00	0.75	316.31	799.97	4.90	-4.22	4.90	0.04	0.00	2.98
4	1000.00	0.50	324.14	999.95	6.56	-5.64	6.56	0.13	-0.12	3.91
5	1200.00	0.75	321.09	1199.94	8.28	-6.97	8.28	0.13	0.12	-1.53
6	1400.00	0.50	344.04	1399.93	10.14	-8.03	10.14	0.17	-0.12	11.48
7	1600.00	0.75	7.00	1599.92	12.28	-8.11	12.28	0.17	0.12	11.48
8	1800.00	1.00	55.95	1799.90	14.56	-6.51	14.56	0.38	0.12	24.48
9	2000.00	1.50	85.89	1999.85	15.72	-2.45	15.72	0.40	0.25	14.97
10	2200.00	1.00	96.74	2199.80	15.70	1.89	15.70	0.28	-0.25	5.42
11	2400.00	0.75	75.59	2399.78	15.82	4.89	15.82	0.20	-0.12	-10.58
12	2600.00	0.50	105.44	2599.77	15.92	7.00	15.92	0.20	-0.12	14.92
13	2800.00	0.50	87.85	2799.76	15.72	8.72	15.72	0.08	0.00	-8.80
14	3000.00	1.25	52.70	2999.74	17.07	11.32	17.07	0.44	0.37	-17.58
15	3200.00	1.75	54.55	3199.67	20.17	15.55	20.17	0.25	0.25	0.93
16	3400.00	1.75	52.40	3399.58	23.80	20.45	23.80	0.03	0.00	-1.07
17	3600.00	1.50	50.26	3599.50	27.34	24.89	27.34	0.13	-0.12	-1.07
18	3800.00	1.00	50.11	3799.45	30.13	28.24	30.13	0.25	-0.25	-0.07
19	4000.00	0.50	1.11	3999.43	32.12	29.59	32.12	0.39	-0.25	-24.50
20	4200.00	0.50	24.17	4199.42	33.79	29.97	33.79	0.10	0.00	11.53
21	4400.00	0.50	232.22	4399.42	34.05	29.64	34.05	0.49	0.00	-75.97
22	4600.00	0.75	296.28	4599.41	34.10	27.77	34.10	0.35	0.12	32.03
23	4800.00	0.75	323.48	4799.39	35.73	25.82	35.73	0.18	0.00	13.60
24	5000.00	0.75	332.54	4999.38	37.94	24.44	37.94	0.06	0.00	4.53
25	5200.00	0.75	21.59	5199.36	40.32	24.32	40.32	0.31	0.00	24.52
26	5400.00	0.75	351.67	5399.35	42.83	24.61	42.83	0.19	0.00	-14.96
27	5600.00	0.75	341.72	5599.33	45.37	24.01	45.37	0.07	0.00	-4.97
28	5800.00	0.75	317.65	5799.31	47.58	22.71	47.58	0.16	0.00	-12.04
29	6000.00	0.75	328.58	5999.30	49.66	21.15	49.66	0.07	0.00	5.46
30	6200.00	1.00	331.39	6199.27	52.31	19.63	52.31	0.13	0.12	1.40
31	6400.00	1.00	334.34	6399.24	55.42	18.04	55.42	0.03	0.00	1.48
32	6600.00	1.00	292.28	6599.21	57.65	15.67	57.65	0.36	0.00	-21.03
33	6800.00	1.25	310.21	6799.18	59.72	12.39	59.72	0.21	0.12	8.97
34	7000.00	1.00	295.14	6999.14	61.87	9.14	61.87	0.19	-0.12	-7.54
35	7200.00	1.00	289.97	7199.11	63.21	5.92	63.21	0.05	0.00	-2.58

GRAMA RIDGE STORAGE
GRAMA RIDGE MORROW UNIT NO. 3

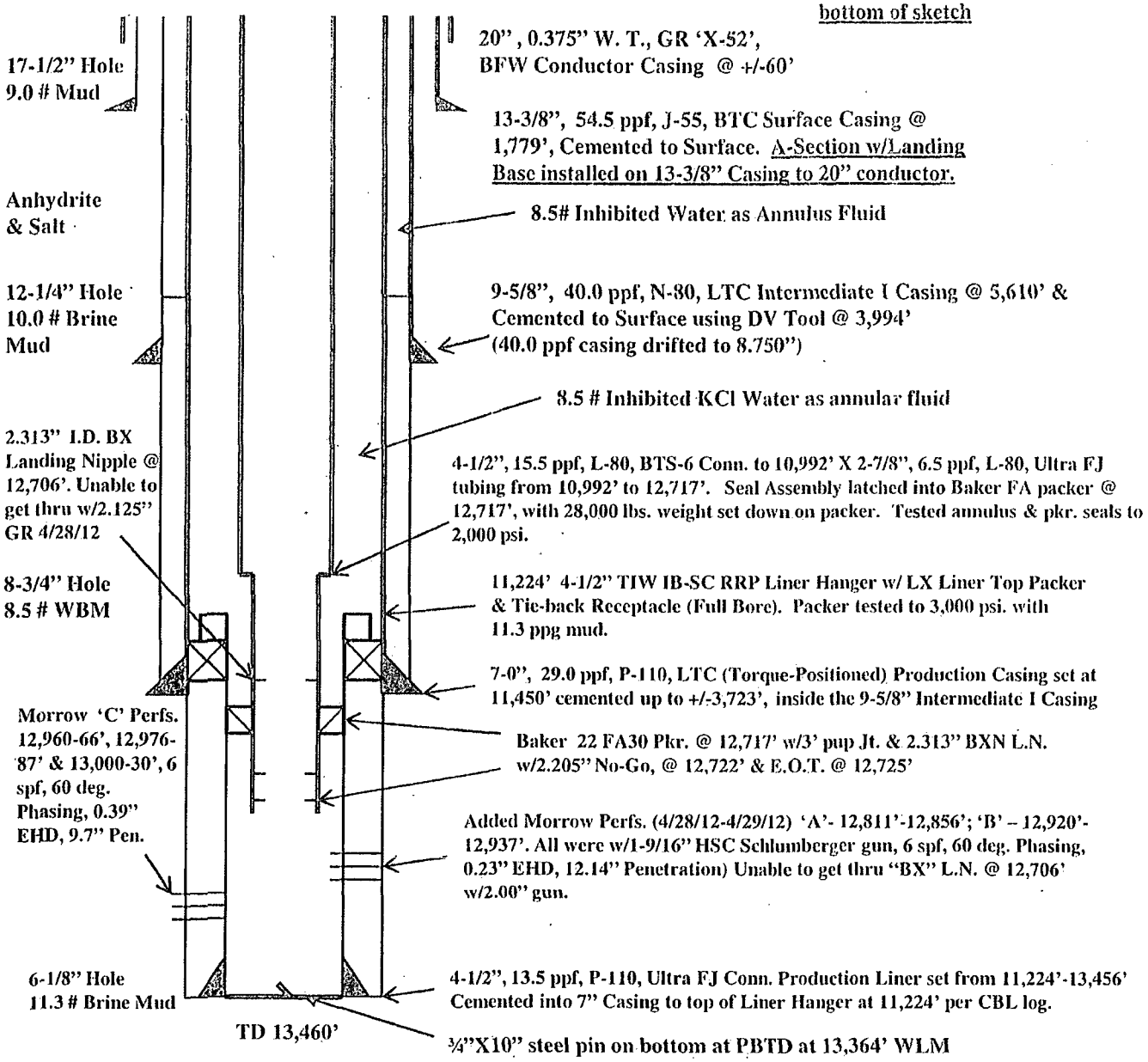
Section 4 , T22S, R34E, 126' FSL, 1,048' FEL, Lea County, NM

Spud: 11/2/10
TD: 1/21/11

Gr. Elev.: 3,597'
RKB: 26'

FINAL COMPLETION 4/29/12 API Number: 30-025-39922

See Wellhead data at bottom of sketch



Cameron Wellhead:
'A' Sect.: 13-3/8" SOW X 13-5/8", 3k
'B' Sect.: 13-5/8", 3k X 11", 5k Csg Spool w/ 2-1/16", 5k casing valve
Tbg. Spool: 11", 5k X 7-1/16", 10k w/two 1-13/16" valves;
Tbg. Hanger: 7" X 4-1/2", 10k w/15.5 ppf, BTS-6, B X B threads w/4" Type 'H' BPV Threads;
Tree: two (2) 7-1/16", 10k Master Valves, 7-1/16", 10k X 7-1/16", 10k cross (7-1/16" X 4-1/16" 10k adapter on top of cross w/Tree Cap w/4-1/2", 8rd lift thread) w/two 4-1/16" wings w/4-1/16", 10k gate valves & 4-1/16", 10k actuated gate valves on each wing. See Cameron Dwg. C5633.

Revised 5-05-2012

GRMU No 8
API # 30-025-39922

Item 31. Formation (Log) Markers

Name*	Top (ft)*	Measured Depth (ft)*
01-Platform Express, Compensated Neutron, Slim Density, Final Comp 1", 2", 5"	200	13,198
02-Platform Express, Hi-Res Latrolog Array, Final Comp 1", 2", 5"	5,608	13,374
03-Platform Express, Three Detector Litho-Density, Compensated Neutron/GR	5,608	11,457
04-Platform Express, Hi-Res Latrolog Array, Micro-CFL/GR	5,608	11,457
05-Borehole Compensated Sonic, GR	1,778	5,612
06-Compensated Neutron PPC/GR	200	5,612
07-Four Arm Caliper	5,608	11,457
08-Platform Express, Slim Density, Compensated Neutron	11,448	13,190
09-Platform Express, Hi-Res Latrolog Array, Micro-CFL/GR	11,448	13,374
10-Temperature Survey (Cement Top)	Surface	6,650

*Descriptions and depths taken from log headings

Jones, William V., EMNRD

From: Jones, William V., EMNRD
Sent: Wednesday, August 22, 2012 7:31 PM
To: 'daryl.gee@enstorinc.com'
Cc: Ezeanyim, Richard, EMNRD; Kautz, Paul, EMNRD
Subject: Proposed Gas Storage well from Enstor Grama Ridge Storage and Transportation, LLC: GRM Unit #8 30-025-39922 Morrow per R-11611-B Case 14518

Hello Mr. Gee:
Evaluating your administrative application and have a couple questions.

We only have proposed federal drilling paperwork in the Division's records and yet your application states the well was spud 11/2/10 and completed 4/29/12.

Please let me know why no completion paperwork has been filed with the Division.
Also, there are no logs on file with the Division, yet your application says the logs were filed – let me know about that also?

Is Enstor the lessee or owner of all Morrow minerals within ½ mile of this well?
Does the BLM and State Land Office know of this application? The BLM has asked we ensure it gets a formal notice of injection/disposal applications on federal acreage.

Regards,
William V. Jones, P.E.
505-476-3448W 505-476-3462F
Engineering Bureau, Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Jones, William V., EMNRD

From: Gee, Daryl <Daryl.Gee@enstorinc.com>
Sent: Thursday, August 23, 2012 8:24 AM
To: Jones, William V., EMNRD
Cc: Ezeanyim, Richard, EMNRD; Kautz, Paul, EMNRD
Subject: RE: Proposed Gas Storage well from Enstor Grama Ridge Storage and Transportation, LLC: GRM Unit #8 30-025-39922 Morrow per R-11611-B Case 14518

Mr. Jones,
Please find the responses to your questions as follows:

1. Included with the C-108 Application, and referenced in my July 20th cover letter, you will find a copy of the BLM Accepted Well Completion or Recompletion Report and Log (Sundry Form 3160-4) evidencing the completion paperwork was filed and accepted by the BLM. If we should file this paperwork separately under a separate cover letter, please advise.
2. I spoke to the OCD District Office (Ms. Donna Mull) about preference of log transmittal. We have electronic copies of the logs, but the District Office requested instead to have paper copies of the logs. Due to the heightened activity in the E&P business sector, our repeated requests from the logging company was a low priority for them. However, we received the paper copies of the logs two days ago and will be sending those to the District Office (delivery early next week).
3. Enstor is the mineral Lessee of the Morrow formation within ½ mile radius of the subject well. We entered into a special agreement with the SLO in September 2006 allowing us to add more injection/withdrawal wells in the storage area and I testified to that, and we may have entered the document in Case 14518/Order No. R-11611-B. Regarding the BLM, when we applied for the drilling of the subject well, the application and completion paperwork inidicated that it would be used for injection/withdrawal service for Natural Gas Storage (Box 1b – Form 3160-4).

I hope these responses aid in your review of the paperwork/application. If you would prefer, I could send electronic copies of the logs as a placeholder until the hard/paper copies arrive in the District office...please advise.
Regards,
Daryl

Daryl W. Gee, Director
Enstor Operating Company, LLC
20329 State Highway 249, Suite 400
Houston, TX 77070
(281) 374-3062 direct
(281) 374-3051 fax

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING THE:

APPLICATION OF ENSTOR GRAMA RIDGE STORAGE AND TRANSPORTATION, L. L. C. FOR THE ESTABLISHMENT OF PRESSURE LIMITATIONS FOR INJECTION WELLS IN THE GRAMA RIDGE GAS STORAGE PROJECT AREA, LEA COUNTY, NEW MEXICO.

CASE NO. 14518
ORDER NO. R-11611-B

ORDER OF THE DIVISION

BY THE DIVISION:

This matter came on for hearing at 8:15 a.m. on July 22, 2010, at Santa Fe, New Mexico, before Examiner William V. Jones.

NOW, on this 31st day of January, 2011, the Division Director, having considered the testimony, the record and the recommendations of the Examiner,

FINDS THAT:

(1) Due public notice has been given, and the Division has jurisdiction of this case and of the subject matter.

(2) The applicant, Enstor Grama Ridge Storage and Transportation, L.L.C. ("Enstor"), seeks an order (i) re-approving the injection and storage and withdrawal of natural gas in certain wells in the Grama Ridge Gas Storage Project (Storage Project), (ii) the establishment of a surface injection pressure limit of 5,000 pounds per square inch, gauge (psig) for all injection wells in the Storage Project, and (iii) the authorization of an administrative procedure for the addition of injection wells to the Storage Project without notice and hearing.

(3) Enstor presented the testimony of landman Daryl Gee as follows:

A. The Grama Ridge Gas Storage Project Area encompasses the following 6 sections of land located in Lea County, New Mexico:

FOR REFERENCE (NOT Part of APPLICATION)

Township 21 South, Range 34 East, NMPM
Section 33: All
Section 34: All

Township 22 South, Range 34 East, NMPM
Section 3: All
Section 4: All
Section 9: All
Section 10 All

B. Sections 33, 34, Township 21 South, Range 34 East, NMPM and Section 3, Township 22 South, Range 34 East, NMPM are state and fee lands. These lands are operated as part of this Storage Project pursuant to the Unit Agreement approved by Division Order No. R-4473, dated January 29, 1973.

C. By Order No. R-4491, dated March 16, 1973, the Division approved injection of purchased gas into the State GRA Well No. 1 located in Section 3, Township 22 South, Range 34 East, NMPM and into the GRA Well No. 2 located in Section 34, Township 21 South, Range 34 East, NMPM.

D. In 1976, by amendment to the Unit Agreement, Section 33, Township 21 South, Range 34 East, NMPM was added to the Grama Ridge Storage Project on which was located an additional injection well: the State GRA Well No. 3. All injection wells on State and Fee lands were committed to the Storage Project on or before September 1, 1976.

E. In 2006, Enstor entered into an "Agreement for Natural Gas Storage in the Grama Ridge-Morrow Formation," Right-of-Way Easement No. RW-30222, with the Commissioner of Public Lands in order to reaffirm and restate the rights of Enstor to conduct gas storage operations on the State lands committed to the Grama Ridge Storage Project Area.

F. Sections 4 and 10, Township 22 South, Range 34 East, NMPM are federal lands. One injection well, the GRU Well No. 4, is located in Section 4. These lands and well have been operated as part of this Storage Project pursuant to an "Agreement for Subsurface Storage of Gas, Morrow Formation, Grama Ridge Area, Lea County, New Mexico" with the United States Department of the Interior, dated November 24, 1975, as amended ("Storage Agreement"). This injection well in Section 4 was committed to the Storage Project on or before April 15, 1981.

G. Enstor acquired its interest in the Grama Ridge Storage Area and became the operator of this Storage Project in 2005.

H. Since becoming operator of the Unit, Enstor, by agreement with the Commissioner of Public Lands, amended the provisions of the Unit Agreement and Enstor entered an Amended and Restated Federal Storage Agreement for Subsurface Storage of Gas, Agreement No. 14-08-0001-14227 (NMNM70953X), Morrow Formation, Grama Ridge Area, Lea County, New Mexico with the United States Department of Interior, Bureau of Land Management.

I. Pursuant to the provisions of the Storage Agreement, Enstor also added Section 9, Township 22 South, Range 34 East, NMPM to the Grama Ridge Storage Area in 2009 and by Order No. R-11611-A, dated September 29, 2009, the Division approved injection in the Grama Ridge Federal 8817-JVP Well No. 1 (API No. 30-025-30686) located 660 feet from the North line and 1980 feet from the East line (Unit B) of said Section. The Division also approved a surface injection pressure for this well of 5000 psig.

J. Although the injection authorizations and approved pressure limitations for the Grama Ridge Storage Area were obtained prior to the adoption of the current Division rules that govern this activity, the Division has entered numerous orders addressing the Grama Ridge Storage Area, including the injection wells therein, and the volumes injected and produced and the pressure utilized in the Grama Ridge Storage Area have been timely reported to the Division.

K. The current status of the Storage Project is as follows:

Sections 33, 34, Township 21 South, Range 34 East, NMPM and Section 3, Township 22 South, Range 34 East, NMPM are state and fee lands. These lands are operated as part of this Storage Project pursuant to the Unit Agreement approved by Division Order No. R-4473, dated January 29, 1973, as amended, and the "Agreement for Natural Gas Storage in the Grama Ridge-Morrow Formation," Right-of-Way Easement No. RW-30222, entered in 2006 with the Commissioner of Public Lands.

Sections 4, 9 and 10, Township 22 South, Range 34 East, NMPM are federal lands on which two injection wells are located. These lands and wells are operated as part of the Storage Project pursuant to Storage Agreement with the Bureau of Land Management, dated November 24, 1975, as amended.

(4) The following five wells in the Storage Project have previously been approved by the Division for injection, storage and withdrawal of natural gas:

A. Grama Ridge Morrow Unit Well No. 001 (API No. 30-025- 21336) located 1980 feet from the North line and 660 feet from the West line (Unit E) of Section 33, Township 22 South, Range 34 East, NMPM;

B. Grama Ridge Morrow Unit Well No. 002 (API No. 30-025-21717) located 1980 feet from the South line and 660 feet from the West line (Unit L) of Section 34, Township 21 South, Range 34 East, NMPM;

C. Grama Ridge Morrow Unit Well No. 003 (API No. 30-025-21746) located 1980 feet from the South and East lines (Unit J) of Section 33, Township 21 South, Range 34 East, NMPM (Enstor plans to disconnect this well and use it as an observation well);

D. Grama Ridge Morrow Unit Well No. 004 (API No. 30-025-21334) located 2310 feet from the North and West lines (Unit F) of Section 4, Township 22 South, Range 34 East, NMPM; and

E. Grama Ridge Federal 8817-JVP Well No. 1 (API No. 30-025-30686) located 660 feet from the North line and 1980 feet from the East line (Unit B) of said Section 9, Township 22 South, Range 34 East, NMPM.

(5) The following are the current perforations and packer setting depths for each well within this project, according to Division records and the submitted C-108's with this Case:

Well No. 001 (API No. 30-025-21336) 12826 to 13025 feet with injection packer at 12760 feet.
Well No. 002 (API No. 30-025-21717) 12921 to 13074 feet with injection packer at 12826 feet.
Well No. 003 (API No. 30-025-21746) 13029 to 13252 feet with injection packer at 12839 feet.
Well No. 004 (API No. 30-025-21334) 12886 to 13111 feet with injection packer at 12795 feet.
8817-JVP Well No. 001 (API No. 30-025-30686) 12828 to 13057 feet with injection packer at 12765 feet.

(6) As part of its efforts to bring the Storage Project under the current regulatory requirements of all responsible government agencies, Enstor discovered the injection authorization for the Grama Ridge Morrow Unit Wells Nos. 001, 002, 003 and 004 had been obtained prior to the current Division rules governing the injection of fluids into reservoirs. Accordingly, Enstor agreed to file the Form C-108 applications in this case to seek Oil Conservation Division approval of the other current injection wells in the Storage Project and to also seek approval of a surface injection pressure for all wells in the Storage Project of 5000 psig.

(7) Enstor presented the testimony of geologist Vicki Devine that established:

A. the Morrow formation under the Storage Project is a typical Morrow sand that demonstrates wide variations in porosity and permeability;

B. the Morrow Sandstones are 10 to 30 feet thick, discontinuous and less than a mile wide;

C. the gas storage interval includes the Morrow "A" through "D" sands although only the "A" through "C" sands are currently perforated; and

D. the reservoir demonstrates geological containment and the Morrow formation under the Storage project is therefore a geologically suitable structure for the storage of natural gas.

(8) Enstor presented the testimony of engineer John Wells that established:

A. Enstor seeks authorization to inject natural gas into the Morrow formation in its Storage Project at surface pressures up to 5000 psig.

B. The original Morrow formation bottomhole reservoir pressure in the Grama Ridge Storage Area was 7,557 psi.

C. Operators of this Storage Project have successfully injected natural gas at pressures as high as those requested in this hearing for over 30 years..

D. Injection at surface pressures not exceeding 5000 psig can occur in the Morrow formation, Grama Ridge Gas Storage Project, without exceeding the reservoir parting pressure.

(9) Enstor's application for injection into the Morrow formation in its Grama Ridge Morrow Unit Wells Nos. 001, 002, 003 and 004 should be granted.

(10) Injection of natural gas into the Storage Project at a maximum surface injection pressure of 5000 psig will not damage the Morrow reservoir or cause injected gas to escape from the injection interval and should be approved.

(11) The proposed Gas Storage Project should be approved and should be governed by Division Rule 19.15.26.8.A et seq., which among other matters, authorize the administrative approval of additional injection wells within the Storage Project without hearing.

IT IS THEREFORE ORDERED THAT:

(1) The application of Enstor Grama Ridge Storage and Transportation, LLC for (i) re-approving the injection, storage, and withdrawal of natural gas in certain wells in the Grama Ridge Gas Storage Project (Storage Project), (ii) the establishment of a surface injection pressure limit of 5,000 pounds per square inch, gauge (psig) for all injection wells in the Storage Project, and (iii) the authorization of an administrative procedure for the addition of injection wells to the Storage Project without notice and hearing, is hereby granted.

(2) The Grama Ridge Gas Storage Project Area being the Morrow formation within the following lands in Lea County, New Mexico:

Township 21 South, Range 34 East, NMPM
Section 33: All
Section 34: All

Township 22 South, Range 34 East, NMPM
Section 3: All
Section 4: All
Section 9: All
Section 10 All

The following wells are hereby approved as injection and withdrawal wells within this project:

a. Grama Ridge Morrow Unit Well No. 001 (API No. 30-025-21336) 1980 feet from the North line and 660 feet from the West line (Unit E) of Section 33.

b. Grama Ridge Morrow Unit Well No. 002 (API No. 30-025-21717) 1980 feet from the South line and 660 feet from the West line (Unit L) of Section 34.

c. Grama Ridge Morrow Unit Well No. 003 (API No. 30-025-21746) 1980 feet from the South and East lines (Unit J) of Section 33.

d. Grama Ridge Morrow Unit Well No. 004 (API No. 30-025-21334) 2310 feet from the North and West lines (Unit F) of Section 4.

In addition, the following well, approved under Division Order No R-13174, remains approved within this project as an injection and withdrawal well:

Grama Ridge Federal 8817-JVP Well No. 1 (API No. 30-025-30686) 660 feet from the North line and 1980 feet from the East line (Unit B) of said Section 9.

(3) The operator shall take all steps necessary to ensure that the injected gas enters only the Morrow formation storage intervals and is not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells.

(4) Injection shall be accomplished through carbon steel tubing installed in a packer set within 100 feet of the uppermost injection perforation in the injection wells. The Division director is allowed to administratively approve alternate packer setting depths, exceeding these tolerances, for good cause shown. The Grama Ridge Morrow Unit Well No. 003 is permitted a packer setting depth of approximately 12,839 feet.

(5) The casing-tubing annulus shall be filled with an inert fluid and a gauge or approved leak-detection device shall be attached to the annulus in order to determine leakage in the casing, tubing, or packer.

(6) The injection wells shall be equipped with a pressure control device or acceptable substitute that will limit the surface injection pressure to no more than **5000** pounds per square inch.

(7) Applications to exceed this 5000 psi maximum limit on any injection and storage well within this project shall be processed at a public hearing after proper notice is provided to affected parties including those parties controlling minerals within the Atoka or Morrow formations within 1 mile.

(8) The operator shall give advance notice to the supervisor of the Division's Hobbs District Office of the date and time the mechanical integrity pressure tests will be conducted on the injection wells, so these operations may be witnessed.

(9) The operator shall immediately notify the supervisor of the Division's Hobbs District Office of the failure of the tubing, casing or packer in any injection well, or the leakage of water, oil or gas from or around any producing or plugged and abandoned wells within the project area, and shall take all steps as may be timely and necessary to correct such failure or leakage.

(10) The Gas Storage Project shall be governed by Division Rule 19.15.26.8.C NMAC et seq., notwithstanding limitations within this or other existing orders.

(11) The Division Director may administratively authorize additional injection wells within the Storage Project as provided in 19.15.26.8G(5) NMAC.

(12) Without limitation on the duties of the operator as provided in Division Rules 30 and 29, or otherwise, the operator shall immediately notify the Division's district office of any failure of the tubing, casing or packer in the well, or of any leakage or release of water, oil or gas from or around any produced or plugged and abandoned well in the area, and shall take such measures as may be timely and necessary to correct such failure or leakage.

(13) The injection authority granted under this order is not transferable except upon division approval. The division may require the operator to demonstrate mechanical integrity of any injection well that will be transferred prior to approving transfer of authority to inject.

(14) The division may revoke this injection permit after notice and hearing if the operator is in violation of 19.15.5.9 NMAC.

(15) Compliance with this order does not relieve the operator of the obligation to comply with other applicable federal, state or local laws or rules, or to exercise due care for the protection of fresh water, public health and safety and the environment.

(16) Jurisdiction is retained by the Division for the entry of such further orders as may be necessary for the prevention of waste and/or protection of correlative rights or upon failure of the operator to conduct operations (1) to protect fresh or protectable waters or (2) consistent with the requirements in this order, whereupon the Division may, after notice and hearing (or without prior notice and hearing in case of emergency), terminate the injection authority granted herein.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

SEAL

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

DANIEL SANCHEZ
Acting Director