DATE IN	SUSPENSE	ENGINEER	LOGGED IN	TYPE	APP NO.
2/27/2017		PRG	2/28/2017	SWD	pMAM1706858405

ABOVE THIS LINE FOR DIVISION USE ONLY

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]

- SWD
- MAVERICK LLC
- 23149

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

Check One Only for [B] or [C]

- NEW

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

- OLD HIPPIE SWD #1
- 30-041-20561

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

[D] Other: Specify _____

- POOL
- SWD; DEVONIAN
- 96101

[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.

John Worrall	See Application	Manager	2-27-2017
Print or Type Name	Signature	Title	Date

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? ____X____Yes _____No

II. OPERATOR: *Manzano, LLC*

ADDRESS: ***P O Box 1737 Roswell, NM 88202***

CONTACT PARTY: Michael Hanagan PHONE: 575-420-8821 cell, 575-623-1996

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. ***Attached***

IV. Is this an expansion of an existing project? _____Yes _____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. . ***Attached***

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. ***Attached***

VII. Attach data on the proposed operation, including:

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, . ***Attached***

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.

IX. Describe the proposed stimulation program, if any.

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

*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.

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.

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

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: ***John Worrall*** TITLE: ***Manager***

SIGNATURE: _____ DATE: ***2/23/2017***

E-MAIL ADDRESS: ***jworrall@manzanoenergy.com***

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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.

MANZANO - LLC

WELLBORE Diagram (Proposed Injection Wellbore)

OLD HIPPIE#1

API #30-041-20961
2035' FSL & 2122' FWL
SEC 32-T6S-R34E
ROOSEVELT, NEW MEXICO
GL Elevation: 4336'
KB Elevation:

Tubulars			
	Size	Grade - Wt	Depth Set (RKB)
Surf.	13 3/8"	J-55 - 32#/ft	404'
Surf.	8 5/8"	J-55 - 24#/ft	2380'
Surf.	8 5/8"	J-55 - 32#/ft	2530'
Prod.	5 1/2"	N80 & P-110 - #17.0/ft	8080'
Tbg	4"	N80 11#/ft FJ	8050'

Rustler @ 1852'

San Andres @ 3208'
8 5/8" 24 & 32#/ft J55 @ 2530'
Cement w/1145sx - Circ 110sx

Devonian & Silurian

Abo @ 6630'

Wolfcamp @ 7400'

Cmt 8450 to 8700

Cisco @ 7810'

Mississippian @ 7886'
Woodford @ 7974'
Siluro-Devonian @ 8078'

~~***Granite Wash @ 8644'***~~

4" 11#/FT FJ lined tubing @ 8050'
5 1/2" Nickel Plated X1 Arrowset Injection Packer @ 8050'
5 1/2" 17# N80 & P110' @ 8080'
Cement w/1200sx - Circulate to Surface

7 7/8" OPEN HOLE COMPLETION f/8080'-~~8700'~~

TD @ ~~8700'~~
8450

Side 1

INJECTION WELL DATA SHEET

OPERATOR: ***Manzano, LLC (formerly Armstrong Energy)***

WELL NAME & NUMBER: ***Old Hippie SWD #1***

WELL LOCATION:	***2035 Fsl, 2122 Fwl***	***K***	***32***	***T6S***	***R34E***
	FOOTAGE LOCATION	UNIT LETTER	SECTION	TOWNSHIP	RANGE

WELLBORE SCHEMATIC (See Attached)

WELL CONSTRUCTION DATA

Surface Casing@40 feet

Hole Size: ***17 ½"*** Casing Size: ***13 3/8"***

Cemented with: ***25 sx***. ***or*** _____ ft^3

Top of Cement: Surface Method Determined: ***Circulated***

Intermediate Casing@2529 feet

Hole Size: ***12 ¼"*** Casing Size: ***8 5/8"***

Cemented with: ***1145 sx.*** ***or*** _____ ft^3

Top of Cement: ***Surface*** Method Determined: ***Circ 110 sxs.***

Production Casing

TD of 8700 feet. Did not originally run casing. Plan 8080 feet.

Hole Size: 7 7/8" Casing Size: 5 ½" (planned)

Cemented with: ***1425 sxs (planned).*** ***or*** _____ ft^3

Top of Cement: Surface (Planned) Method Determined: _____

Total Depth: ***8080 ft casing, 8700 TD***

Injection Interval

8080 to 8700 feet (Openhole)

Side 2

INJECTION WELL DATA SHEET

Tubing Size: ***4" Flush Joint (11#/ft)***

Type of Packer: ***Nickel plated X1 Aeroset***

Packer Setting Depth: ***8050 feet***

Other Type of Tubing/Casing Seal (if applicable): ***None***

Additional Data

1. Is this a new well drilled for injection? ***No***

   If no, for what purpose was the well originally drilled? ***Exploratory Test resulted in dry hole***

2. Name of the Injection Formation: ***Devonian***
3. Name of Field or Pool (if applicable): ***Wildcat***

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. ***None***

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

_____

_____

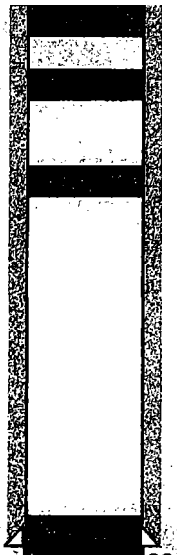
_____

MANZANO - LLC

WELLBORE Diagram (Existing as of 7/27/14)

OLD HIPPIE#1

API #30-041-20961
2035' FSL & 2122' FWL
SEC 32-T6S-R34E
ROOSEVELT, NEW MEXICO
GL Elevation: 4336'
KB Elevation:



35sk Surface Plug f/surf-100'

35sk Plug f/350-450'

40sk Plug f/1800-1900'

Rustler @ 1852'

San Andres @ 3208'

8 5/8" 24 & 32#/ft J55 @ 2530'
Cement w/1145sx - Circ 110sx

60sk Shoe Plug f/2485-2585'

50sk Plug f/3170'-3270'

50sk Plug f/4508'-4608'

7 7/8" hole f/3469'-9503'

Abo @ 6630'

50sk Plug f/6566'-6666'

Wolfcamp @ 7400'

40sk Plug f/7355'-7455'

Cisco @ 7810'

Mississippian @ 7886'

40sk Plug 8147'-8247'

Woodford @ 7974'
Siluro-Devonian @ 8078'
Granite Wash @ 8644'

TD 7 7/8" hole @ 8700'

Date: February 23, 2017

Form C-108 Responses

Application for Authorization to Inject

I. The purpose of this application is for salt water disposal. This application should qualify for administrative approval.

II. II. Operator: Manzano, LLC, P O Box 1737, Roswell, NM 88202, Contact Mike Hanagan, 575-623-1996; cell 575-420-8821.

III. The Injection Well Data Sheet is attached.

IV. This is not an expansion of an existing project.

V. The Well Radius Map is attached.

VI. Within the area of review there are two dry holes that went to the depth of the Devonian injection interval. Shown on the well data sheet is the current and proposed well data for the proposed injection well. Also shown is a former 1957 dry hole drilled by Magnolia. Magnolia drill stem tested the Devonian from 8400 to 8439 feet and recovered 4572 feet of salt water. A 30 minute shut in pressure was 3095#. Attached are wellbore diagrams for the plugged and abandoned Magnolia well as well as current and proposed diagrams for the Old Hippie SWD #1.

VII. Data on the proposed operation is as follows.

a. Manzano plans to inject a maximum of 20,000 BWPD, an average of 4000 BWPD, and expects to ultimately inject 5 million barrels of water.

b. The system is closed.

c. The average injection pressure is anticipated to be 500 psi. The maximum injection pressure will be ***1616 psi.***

d. San Andres Injection Fluid: The fluids to be injected will come from further development of the Chaveroo San Andres field. Attached is a field study of the Chaveroo field which shows the produced water is a brine with 165,000 ppm chlorides.

e. Devonian disposal zone: The zone to be injected does not produce within two miles of the proposed well. The formation produces brine water. A DST of the Devonian in the Strata Alondra #1 in Section 17-T7S-R34E shows 80,000 chlorides with a resistivity of .0794 @ 82 degrees. Both the injection fluid and the injection zone formation water are brines.

VIII. The injection zone will be from open hole from 8080 to 8700 in this existing wellbore. The zone is the Devonian formation which is a dolomite. There are no known aquifers below the proposed injection zone. The New Mexico State Engineer's office does not show any water wells in the review area.

IX. Manzano plans to acidize the injection zone with 10,000 gals of 15% HCl acid.

X. The previous operator filed a sonic log, neutron density and resistivity log with the NMOCD. A segment of these logs is attached. A current and proposed wellbore diagram is attached.

XI. The New Mexico State Engineer's office indicates there are no water wells (PODS) in the review area. (Copy attached)

XII. We have examined all available geologic and engineering evidence and do not see any faulting or other evidence of a hydrologic connection between the injection zone and underground sources of drinking water.

XIII. A Lease Map is attached. Proof of notice has been sent to Armstrong Energy, of P O Box 1973, Roswell, NM 88202, who is the owner of deep rights under the leases within the review area. Proof of notice has also been sent to the surface owner, George Hay, LLC of 1728 Avenue Q, Portales, NM 88130. A memorandum of a salt water disposal agreement between Manzano, LLC and George Hay is attached. Manzano, LLC is the operator of the shallow leases within the review area. Copies of the Form C-108 and this application and attachments have been sent to the State of New Mexico, Commissioner of Public Lands, P O Box 1148, Santa Fe, New Mexico.

Legal notice has been submitted for publication in Eastern New Mexico News in Roosevelt County, NM. A copy is attached.

Thank you for your review of this proposal.

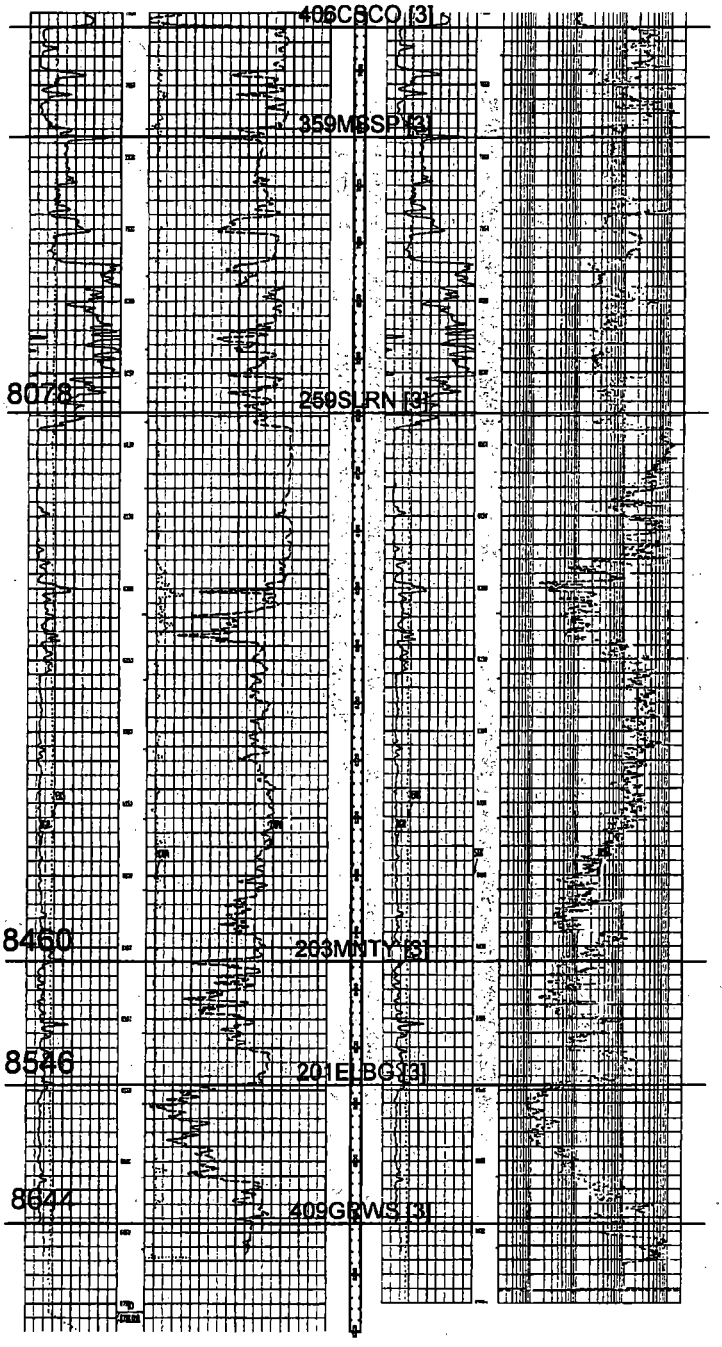
Sincerely,

John Worrall
Manzano, LLC

Attachments

1. Injection Well Data Sheet
2. Well Data Sheet
3. Old Hippie Current Wellbore diagram
4. Old Hippie Proposed Wellbore Diagram
5. Magnolia Vallie Whitehead #1 wellbore diagram
6. Well Radius Map
7. Injection water analysis from the Chaveroo field study published by the Roswell Geological Society.
8. Lease Map.
9. Copy of the Legal Notice published in the Eastern New Mexico News.
10. Copies of notice to George Hay and Armstrong Energy.
11. Memorandum of the salt water disposal agreement.
12. New Mexico State Engineer's Office POD Location Report

ARMSTRONG ENGY CORP
OLD HIPPIE
1
30041209610000



5 1/2" 17" Casing to be set at 8080 feet.
4" 11# flush jt tubing will be set into a Nickel plated X1 Aeroset Packet at 8050 feet.

Information	***Well Data Sheets***		
Type	Injection Well (Current)	Injection Well (Proposed)	Penetration in Area of Review, Dry Hole
Well Name	Manzano, LLC Old Hippie SWD #1	Manzano, LLC Old Hippie SWD #1	Magnolia Vallie Whitehead #1
Location	32-T6S-R34E, 2035 Fsl, 2122 Fwl	32-T6S-R34E, 2035 Fsl, 2122 Fwl	32-T6S-R34E, 1980 Fsl, 660 Fwl
Surface Hole Size	17 1/2"	17 1/2"	17 1/2
Surface Casing Depth	40	40	442
Surface Casing Size	13 3/8"	13 3/8"	13 3/8"
Surface Cement	25 sxs	25 sxs	425 sxs
Cement Top	Surface	Surface	Surface
Intermediate Hole Size	12 1/4"	12 1/4"	12 1/4"
Intermediate Casing Depth	2529 ft	2529 ft	4180
Intermediate Casing Size	8 5/8"	8 5/8"	8 5/8"
Intermediate Cement	1145 sxs	1145 sxs	1600 sxs
Intermediate Cement Top	Surface	Surface	205 ft (temp survey)
Production Hole Size	7 7/8"	7 7/8"	7 7/8
Production Casing Depth	Did not run pipe	8080	8100
Production Casing Size		5 1/2"	5 1/2"
Production Cement		1425 sxs	260 sxs
Production Cement Top		Surface	6880
Total Depth	8700	8700	8772
Tubing Depth	None P&A 2014	8050	None P&A 1957
Tubing Size		4" Flush joint 11#/ft	
Packer Type		Nickel plated X-1 Aeroset	
Packer Depth		8050	
Surface Casing Pulled	None Pulled	NA	None Pulled
Intermediate Casing Pulled	None Pulled	NA	None Pulled
Production Casing Pulled	None set	NA	6800 feet
Cement Plugs	8247-8147, 7455-7355, 6666-6566,	NA	8154-7950, 7600-7250, 4200-4050,
	4608-4508, 3270-3170, 2585-2485,	NA	442-surface.
	1800-1900, 350-450, 100 to 0.	NA	

MANZANO - LLC

WELLBORE Diagram (Proposed Injection Wellbore)

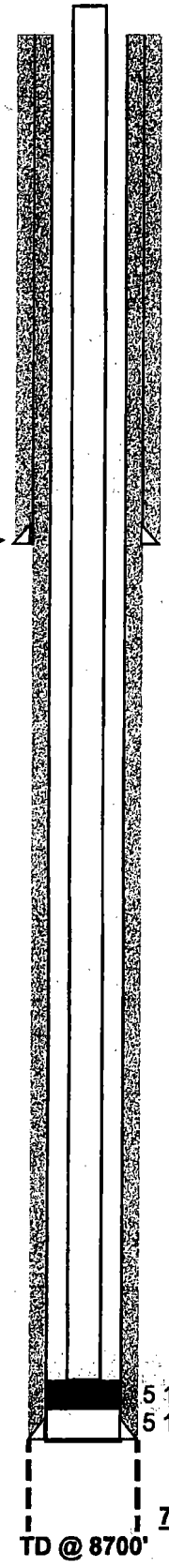
OLD HIPPIE#1

API #30-041-20961
2035' FSL & 2122' FWL
SEC 32-T6S-R34E
ROOSEVELT, NEW MEXICO
GL Elevation: 4336'
KB Elevation:

Tubulars			
	Size	Grade - Wt	Depth Set (RKB)
Surf.	13 3/8"	J-55 - 32#/ft	404'
Surf.	8 5/8"	J-55 - 24#/ft	2380'
Surf.	8 5/8"	J-55 - 32#/ft	2530'
Prod.	5 1/2"	N80 & P-110 - #17.0/ft	8080'
Tbg	4"	N80 11#/ft FJ	8050'

Rustler @ 1852'

San Andres @ 3208'
8 5/8" 24 & 32#/ft J55 @ 2530'
Cement w/1145sx - Circ 110sx



Abo @ 6630'

Wolfcamp @ 7400'

Cisco @ 7810'

Mississippian @ 7886'
Woodford @ 7974'
Siluro-Devonian @ 8078'

Granite Wash @ 8644'

4" 11#/FT FJ lined tubing @ 8050'
5 1/2" Nickel Plated X1 Arrowset Injection Packer @ 8050'
5 1/2" 17# N80 & P110' @ 8080'
Cement w/1200sx - Circulate to Surface

7 7/8" OPEN HOLE COMPLETION f/8080'-8700'

TD @ 8700'

MANZANO - LLC
WELLBORE Diagram

MAGNOLIA VALLIE WHITEHEAD #1

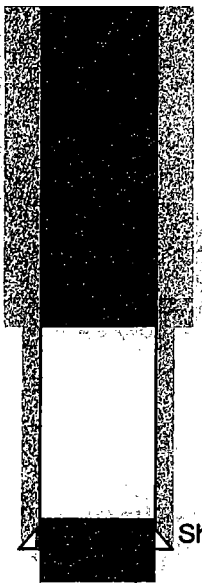
API # 3004100147
1980' FSL & 660' FWL
SEC 32-T6S-R34E
ROOSEVELT, NEW MEXICO
GL Elevation: 4336'
KB Elevation:

Rustler @ 1840'

13 3/8" @ 442'
Cement w/425'sx - circulated

San Andres @ 3214'

8 5/8" @ 4180'
Cement w/1600sx
TOC @ 205 by T-Survey



Surface Plug f/Surf-442'

Shoe Plug f/4050'-4200'

7 7/8" Open hole f/4180'-6800'

5 1/2" casing pulled f/6800'

Plug f/7250'-7600'

Wolfcamp @ 7340'

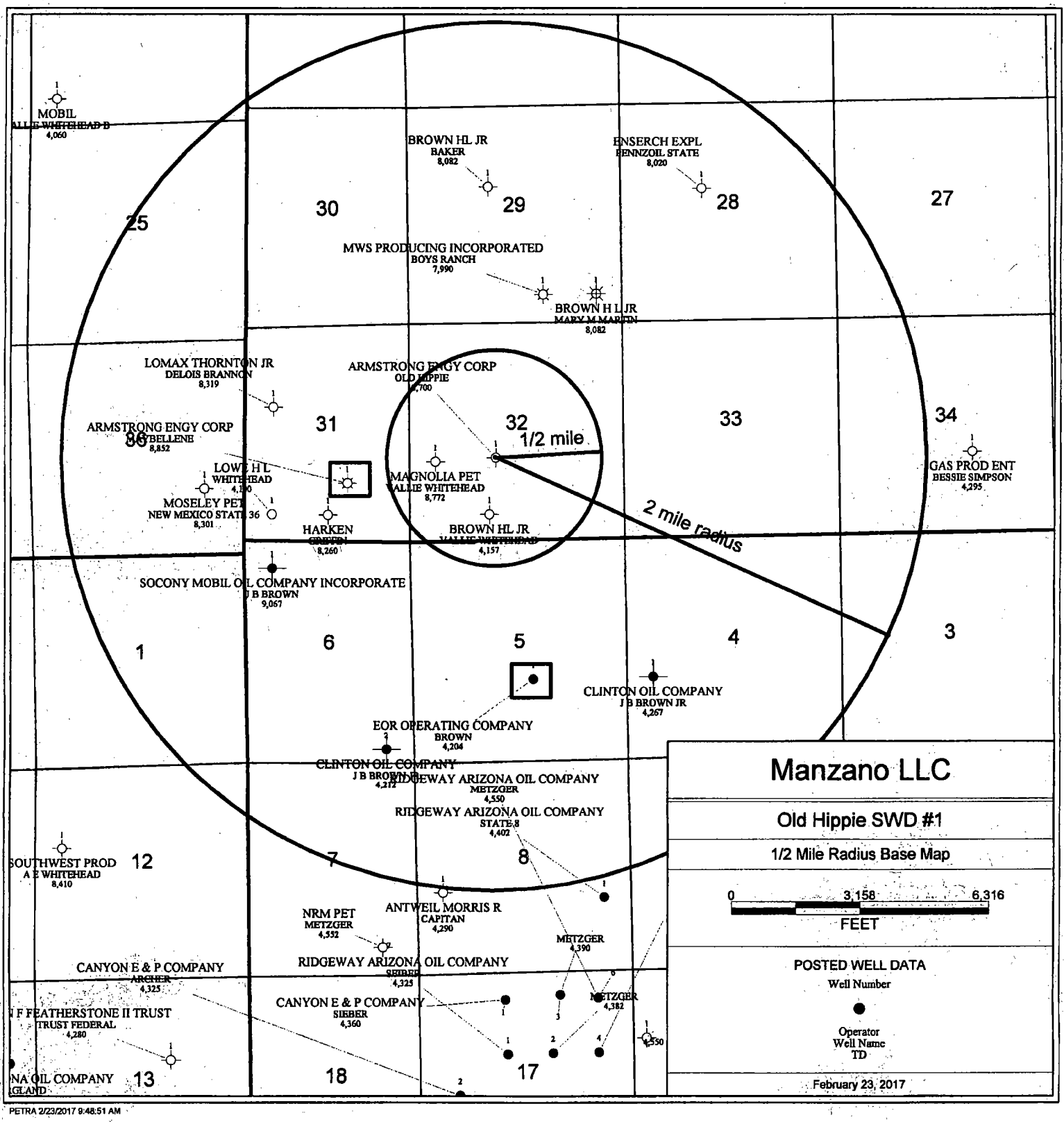
Cisco @ 7677'

Plug f/7950'-8154'

5 1/2" @ 8100'
Cement w/260sx - TOC @ 6880'

Woodford @ 8138'
Silluro-Devonian @ 8248'

TD @ 8772'



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ROSWELL GEOLOGICAL SOCIETY SYMPOSIUM

Author: George L. Scott, Jr.
Affiliation: Consulting Geologist
Date: November 1966

Field Name: Chaveroo
Location: T-7,8-S, R-33, 34-E
County & State: Chaves & Roosevelt Counties, New Mexico

Discovery Well: Champlin Pet. Co. & Warren American Oil Co. #1 Hondo State, SE/4 NE/4 Section 32, T-7-S, R-33-E. Completed 3/20/65 IPP 148 BOPD + 2 BWPD, GOR 810.

Exploration Method Leading to Discovery: 80% subsurface 20% seismic

Pay Zone:
Formation Name: San Andres
Depth & Datum Discovery Well: Top of field pay is at 4184 (+255) Top perf in disc. well 4299.
Lithology Description: Tan to brown, fine to medium crystalline dolomite with scattered anhydrite inclusions, and vugular, inter-crystalline and fracture porosity. Most wells complete from 1st to 2nd porosities; scattered wells also perf 3rd porosity. The net porosity is based on a cut-off of 4% and covers only 1st and 2nd porosities. (Cont. under Type Trap)
Approximate average pay: 210 gross 40 net Productive Area 11,000 acres (on Nov. 1, 1966)

Type Trap: Stratigraphic. Porosity and permeability fails up dip along the north and west margin of the field to provide the trap.

Pay Zone (cont. from above). Net porosity map is not a strict net pay map as there are wells where extensive fracturing has lowered the porosity cut-off to 2 1/2%. It also includes porosity in the 2nd porosity interval at the south and southeast field margin that is below the irregular oil-water contact.

Reservoir Data: 6 % Porosity, .7 Md Permeability, 25 % Sw, 16 % So

Oil: 26° API, black, sour

Gas: GOR 400 to 1000

Water: 66,600 Na+K, 27,680 Ca, 4860 Mg, 165,600 Cl, 200 SO_4, 240 HCO_3, Fe

FM WATER

Specific Gravity 1.174 Resistivity .035 ohms @ 110 °F

Initial Field Pressure: 1340 psi @ +140 datum Reservoir Temp. 110°F

Type of Drive: Solution gas

Normal Completion Practices: Set casing through pay and selectively perforate with one shot per interval. Acidize with 2000 gallons of acid, and sand fracture with 30,000 gallons of oil and 30,000 pounds of sand.

Type completion: Both flowing and pumping Normal Well Spacing 40 Acres

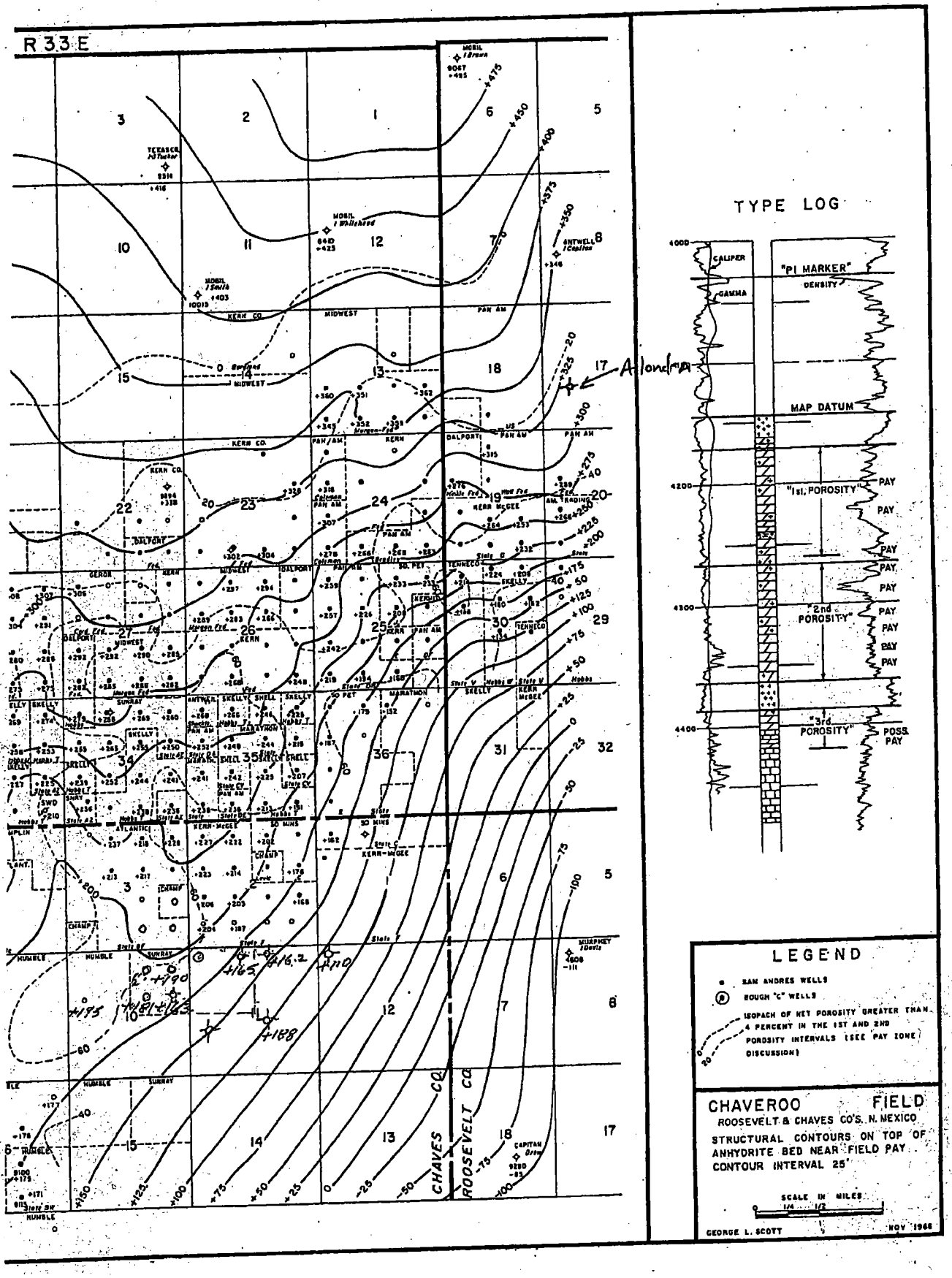
Deepest Horizon Penetrated & Depth: Bough "C" at 9100' in the discovery well. At the south end of the field several abandoned Bough "C" wells have been plugged back to the San Andres

Other Producing Formations in Field: None within the area of San Andres production, however, Bough "C" production in the Tobac field adjoins the Chaveroo San Andres field on the south.

Production Data:

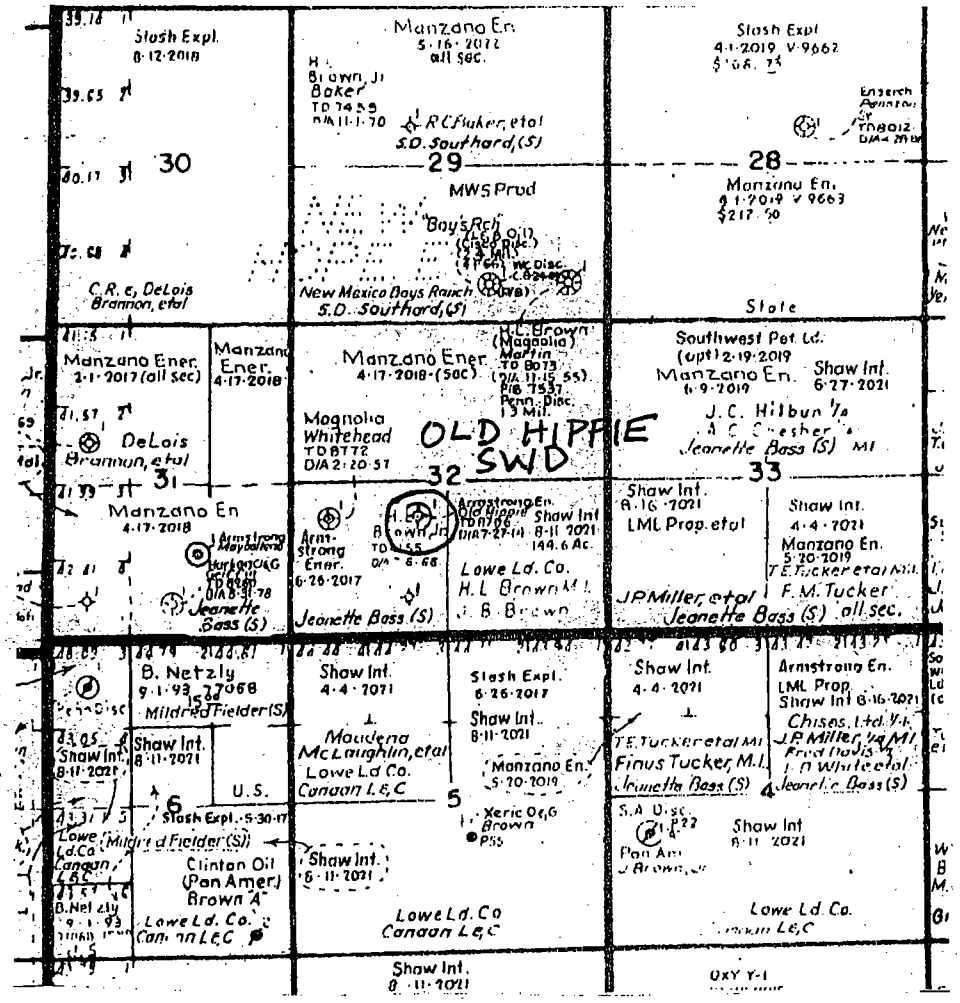
YEAR	TYPE	No. of wells @ yr. end Prod.	No. of wells @ yr. end S.I.or Abd.	PRODUCTION OIL IN BARRELS GAS IN MMCF ANNUAL	PRODUCTION OIL IN BARRELS GAS IN MMCF CUMULATIVE	YEAR	TYPE	No. of wells @ yr. end Prod.	No. of wells @ yr. end S.I.or Abd.	PRODUCTION OIL IN BARRELS GAS IN MMCF ANNUAL	PRODUCTION OIL IN BARRELS GAS IN MMCF CUMULATIVE
1965	OIL	45		166,896	166,896		OIL				
	GAS			179,400	179,400		GAS				
1966*	OIL	241		1,474,705	1,641,601		OIL				
	GAS			1,084,527	1,263,927		GAS				
	OIL						OIL				
	GAS						GAS				
	OIL						OIL				
	GAS						GAS				

* 1966 production to September 30, 1966.


R 33 E
TYPE LOG
CALIPER
GAMMA
"PI MARKER"
DENSITY
MAP DATUM
"1st POROSITY"
"2nd POROSITY"
"3rd POROSITY"
PAY
POSS. PAY
4000
4200
4300
4400
Alondra
LEGEND
SAN ANDRES WELLS
ROUGH "C" WELLS
ISOPACH OF NET POROSITY GREATER THAN 4 PERCENT IN THE 1ST AND 2ND POROSITY INTERVALS (SEE PAY ZONE DISCUSSION)
CHAVEROO FIELD
ROOSEVELT & CHAVES CO'S, N. MEXICO
STRUCTURAL CONTOURS ON TOP OF ANHYDRITE BED NEAR FIELD PAY.
CONTOUR INTERVAL 25'
SCALE IN MILES
GEORGE L. SCOTT
NOV 1965
CHAVES CO
ROOSEVELT CO

LEASE MAP.

The proposed salt water disposal well is the Manzano, LLC Old Hippie #1 located in Section 32-T6S-R34E at 2035 Fsl and 2122 Fwl.



LEGAL NOTICE

Notice is hereby given of the application of Manzano, LLC, P O Box 1737, Roswell, New Mexico to the Oil Conservation Division, and to Commissioner of Public Lands, State of New Mexico, for approval to reenter and convert the Old Hippie #1 well to a salt water disposal well in the Devonian formation. The surface is owned by George Hay of Portales, New Mexico.

The Manzano, LLC Old Hippie SWD #1, API#3004120961, is located at 2035 Fsl, 2122 Fwl in Section 32, Township 6 South, Range 34 East of Roosevelt County, New Mexico.

The injection interval is the Devonian formation present at depths between 8080 and 8700 feet. The maximum injection pressure it to be 1616 psi and the maximum injection rate is 20,000 BWPD.

Interested parties should file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Drive, Santa Fe, NM 87505 within fifteen days.

Inquiries regarding this application should be directed to Manzano, LLC Attention: Mike Hanagan, P O Box 1737, Roswell, New Mexico 88202.

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

No PODs found

POD Search:

POD Basin: CAUSEY LINGO

UTM NAD83 Radius Search (in meters):

Easting (X): 639712 Northing (Y): 3715280 Radius: 1760

Goetze, Phillip, EMNRD

From: Goetze, Phillip, EMNRD
Sent: Thursday, March 2, 2017 10:27 AM
To: 'John Worrall'
Cc: Jones, William V, EMNRD; McMillan, Michael, EMNRD
Subject: RE: Old Hippie SWD Well No.1, Alondra SWD #1

Mr. Worrall:

The Division has a standing policy not to permit disposal in the Ellenburger Formation due to its high probability of having hydraulic connectivity with deeper units, including the granite wash and associated Precambrian surface. Historical injection into the Ellenburger in Texas along with recent studies of the paleostructures of the Ellenburger (such as Loucks and Anderson (1985) and Loucks and Mescher (2001)) have shown vertical migration of injection fluids to lower units even where the immediate borehole conditions have indicated a lower permeability barrier. The top of Montoya represents the target for the top of the cement plug due to the inability to assess the quality of the bond for this plug once in place. This would mean a PBTD of approximately 8460 ft.

Additionally, there must be some conformity in the notice description and the lithologic description provided in the C-108 application. The content of the C-108 and the copy of the published notice states an injection interval being the "Devonian formation". Yet, the lithology of the injection interval being proposed for this well includes the Silurian (Fusselman), Ordovician Montoya, and the Cambrian granite wash. This alone is basis for rejection of the proposed interval due to improper notice.

Historically, the Division will include the Fusselman with Devonian as being transitional and approve this section as the injection interval. Therefore, I would suggest this is Manzano's best solution to the current situation and recommend a redesign of the proposed well completion with a PBTD of 8460 ft BGS. Please contact me with any questions regarding the content of this correspondence. PRG

Phillip Goetze, PG
Engineering Bureau, Oil Conservation Division
New Mexico Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive, Santa Fe, NM 87505
Direct: 505.476.3466
E-mail: phillip.goetze@state.nm.us

From: John Worrall [mailto:jworrall@manzanoenergy.com]
Sent: Wednesday, March 1, 2017 6:15 PM
To: McMillan, Michael, EMNRD <Michael.McMillan@state.nm.us>
Cc: Goetze, Phillip, EMNRD <Phillip.Goetze@state.nm.us>; Jones, William V, EMNRD <WilliamV.Jones@state.nm.us>
Subject: RE: Old Hippie SWD Well No.1, Alondra SWD #1

Mike,

For the Old Hippie SWD #1 application, we propose to emplace a 30 sack cement plug from 8700 ft TD to 8625. This would cover the top (8644) of the Granite Wash/Granite. We would like to inject from 8080, which is the bottom of 5 1'2 casing to be emplaced, to 8625 feet. The bottom of porosity appears to be 8610 feet so this would work.

For the Alondra application, we already ran the notification in the Eastern New Mexico News of Portales, Roosevelt County. Attached is a copy. Also EOR is the operator of the San Andres formation rights (not the Devonian) within the ½ mile Area of Review. Strata Production is the operator of the Devonian rights, the injection zone. We have discussed this proposal with Strata.

Sincerely,

John Worrall

From: McMillan, Michael, EMNRD [mailto:Michael.McMillan@state.nm.us]
Sent: Wednesday, March 1, 2017 4:21 PM
To: John Worrall <jworrall@manzanoenergy.com>
Cc: Goetze, Phillip, EMNRD <Phillip.Goetze@state.nm.us>; Jones, William V, EMNRD <WilliamV.Jones@state.nm.us>
Subject: RE: Old Hippie SWD Well No.1, Alondra SWD #1

John:
Can you clarify the injection depths for the Devonian in the Old Hippie if you run cement up to the Devonian?
For the Alondra #1, if EOR is the operator in the Devonian, and you cannot get an address, then Manzano will be required to run a legal ad in a newspaper in the county of the well (I think the is in Roosevelt, so it would be in the Portales paper), and the OCD will require affidavit of publication.

Thanks
Mike

From: John Worrall [mailto:jworrall@manzanoenergy.com]
Sent: Wednesday, March 1, 2017 11:20 AM
To: McMillan, Michael, EMNRD <Michael.McMillan@state.nm.us>
Cc: Goetze, Phillip, EMNRD <Phillip.Goetze@state.nm.us>; Jones, William V, EMNRD <WilliamV.Jones@state.nm.us>
Subject: RE: Old Hippie SWD Well No.1, Alondra SWD #1

Hi Mike,

I wanted to respond to your requests and notes on these two applications.

The return receipts for the Old Hippie SWD #1 application will be sent upon arrival. Last time it took a week to get the receipts back and forward them to you.

The operator for the Devonian within the ½ mile AOR is Armstrong Energy whom we did notify. We will forward the receipt.

We also desire injection into the Devonian. You mention it may take longer to get this permit because the well penetrated Granite. The prior operator (Armstrong) noted Granite Wash at the very bottom of the hole. Would it be preferable to set a cement plug at the bottom of the hole and bring cement up into the Devonian.?

Last attached is our receipt to EOR Operating for the Alondra SWD #1 application. I assume this is 'the notice' you are referring to, all others have been forwarded. EOR's notice was returned for an incorrect address. I double checked the NMOCD site for the wells in Section 17 and Section 5 of T7S-R34E and this is the address of the operator on file for

these wells. No change of operator has been filed of record. Do you have notice that operations for these shallow San Andres wells has changed?

Thank you for your attention to these applications.

Sincerely,

John Worrall

From: McMillan, Michael, EMNRD [mailto:Michael.McMillan@state.nm.us]
Sent: Monday, February 27, 2017 4:24 PM
To: jworrall@manzanoenergy.com
Cc: Goetze, Phillip, EMNRD <Phillip.Goetze@state.nm.us>; Jones, William V, EMNRD <WilliamV.Jones@state.nm.us>
Subject: Old Hippie SWD Well No.1

John:
the OCD received your application for the Old Hippie SWD Well No.1, Curry County New Mexico.
The OCD needs the following information:
The OCD requires return receipts for the surface owner.
The OCD requires return receipts for the operator in the Devonian within ½ mile AOR. If no operator, then lessees, if no lessees, then mineral interest owners (The OCD also requires return receipts).
The OCD encourages Devonian injection; however, in the Old Hippie SWD Well No.1, the well penetrated the Granite, as a result it will take longer than normal to process your application.

Also, your other application will require the notice by Friday, or the OCD will cancel your application.

Thanks
Mike
Hope your family is doing well

MICHAEL A. MCMILLAN
Engineering Bureau, Oil Conservation Division
1220 south St. Francis Dr., Santa Fe NM 87505
O: 505.476.3448
Michael.McMillan@state.nm.us

CLOVIS MEDIA INC
PO BOX 1689
CLOVIS NM 88102-1689
(575)763-3431
Fax (575)762-0153

ORDER CONFIRMATION

Salesperson: Tammy Newby | Printed at 02/24/17 15:47 by tnewb-nj

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Acct #: 5974676 | Ad #: 57497 | Status: N

MANZANO, LLC
PO BOX 1737
ROSWELL NM 88202

Start: 03/01/2017 | Stop: 03/01/2017
Times Ord: 1 | Times Run: ***
STD 1.00 X 56.00 | Words: 175
Total STD 56.00
Class: 0001 LEGALS - CURRY COUNTY
Rate: NGOVL | Cost: 103.18
Affidavits: 1

Contact:
Phone: (575)420-5853
Fax#:
Email: john.worrall@senmgeologist.c
Agency:

Ad Descrpt: PUBLIC NOTICE MANZANO LLC
Given by: *
Created: tnewb 02/24/17 15:09
Last Changed: tnewb 02/24/17 15:46

PUB	ZONE	EDT	TP	RUN DATES
CNJ	A	95	S	03/01

AUTHORIZATION

Under this agreement rates are subject to change with 30 days notice. In the event of a cancellation before schedule completion, I understand that the rate charged will be based upon the rate for the number of insertions used.

Name (print or type) _____ Name (signature) _____

(CONTINUED ON NEXT PAGE)

AFFIDAVIT OF LEGAL PUBLICATION

Legal # 57497 Copy of Publication

STATE OF NEW MEXICO
COUNTIES OF CURRY
AND ROOSEVELT:
The undersigned, being dully sworn, says:
That she is a Legal Clerk of
The Eastern New Mexico News
Newspaper of general circulation,
Published in English at Clovis and Portales,
said counties and state, and that the
hereto attached

Public Notice
Manzano LLC
Legal 57497

was published in The Eastern New Mexico News a daily newspaper duly qualified for that purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for 2 Days/weeks on the same days as follows:

First Publication: March 1, 2017
Second Publication:
Third Publication:
Fourth Publication:

Tammy Newby

Legal Clerk

Subscribed and sworn to before me,
March 01, 2017

Leslie Nagy

Notary Public

OFFICIAL SEAL
LESLIE NAGY
NOTARY PUBLIC STATE OF NEW MEXICO

My commission expires ~~on~~ May 24, 2019 My commission expires ________

Legal 57497
March 1, 2017

Notice is hereby given of the application of Manzano, LLC, PO Box 1737, Roswell, New Mexico to the Oil Conservation Division, and to Commissioner of Public Lands, State of New Mexico, for approval to reenter and convert the Old Hippie #1 well to a salt water disposal well in [illegible] formation. [illegible] by George [illegible] of Portales, New Mexico.

The Manzano, LLC Old Hippie SWD #1, API [illegible], to located at 2085 [illegible], 2182 [illegible] in Section 32, Township 6 South, Range 34 East of Roosevelt County, New Mexico.

The injection interval is the Devonian formation present at depths between 8080 and [illegible] feet. The maximum injection pressure is to be 1616 psi and the maximum injection rate is 20,000 BWPD.

Interested parties should file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Drive, Santa Fe, NM 87505 within fifteen days.

Inquiries regarding this application should be directed to Manzano, LLC Attention: [illegible] Hanagan, PO Box 1737, Roswell, New Mexico 88202.

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Armstrong Energy
Attention: Kyle Alpers
PO Box 1973
Roswell, NM 88202

9590 9402 2648 6336 3497 10

2. Article Number *(Transfer from service label)*
7016 3010 0000 1717 4365

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Marina Mahza ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* MARINA MAHZA C. Date of Delivery 2/28/17

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

FEB 28 2017 NM USPS 88201

3. Service Type
☐ Adult Signature
☐ Adult Signature Restricted Delivery
☑ Certified Mail®
☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
☐ Priority Mail Express®
☐ Registered Mail™
☐ Registered Mail Restricted Delivery
☐ Return Receipt for Merchandise
☐ Signature Confirmation™
☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

George Hay
1728 Avenue Q
Portales, NM 88130

9590 9402 2648 6336 3497 03

2. Article Number *(Transfer from service label)*
7016 3010 0000 1717 4372

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Linda Hay ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* Linda Hay C. Date of Delivery 2/28/17

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Adult Signature
☐ Adult Signature Restricted Delivery
☑ Certified Mail®
☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
☐ Priority Mail Ex
☐ Registered Mail
☐ Registered Mail Restricted Delivery
☐ Return Receipt for Merchandise
☐ Signature Confirmation™
☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

New Mexico Oil Conservation Division
1625 N. French Drive
Hobbs, New Mexico 88240

9590 9402 2648 6336 3497 34

2. Article Number *(Transfer from service label)*
7016 3010 0000 1717 4334

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* C. Date of Delivery 2-27-17

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Adult Signature
☐ Adult Signature Restricted Delivery
☑ Certified Mail®
☐ Certified Mail Restricted Delivery
☐ Collect on Delivery
☐ Collect on Delivery Restricted Delivery
☐ Priority Mail Express®
☐ Registered Mail™
☐ Registered Mail Restricted Delivery
☐ Return Receipt for Merchandise
☐ Signature Confirmation™
☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

Manzano, LLC
PO Box 1737
Roswell, NM 88202
575-623-1996

February 23, 2017

New Mexico Oil Conservation Division
1220 South Francis Drive
Santa Fe, New Mexico 87505

New Mexico Oil Conservation Division
1625 N. French Drive
Hobbs, New Mexico 88240

RE: Salt water Disposal Agreement
Manzano, LLC Old Hippie SWD #1

Manzano, LLC hereby submits an application to convert the plugged and abandoned Old Hippie SWD #1 to a salt water disposal well to be renamed the Manzano, LLC Old Hippie SWD #1. Accordingly, please find enclosed an original and one copy of our application Form C-108 with attachments. A third copy has been sent to the Division Office in Hobbs. A Legal Notice of our application has been filed with the Eastern New Mexico News.

Should you have questions regarding our application, I can be reached at 575-623-1996 or 575-420-8821cell. Thank you for your assistance in handling our application.

Sincerely,

John Worrall
On Behalf of Manzano, LLC

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? ___X___Yes _____No

II. OPERATOR: *Manzano, LLC*

ADDRESS: ***P O Box 1737 Roswell, NM 88202***

CONTACT PARTY: Michael Hanagan PHONE: 575-420-8821 cell, 575-623-1996

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. ***Attached***

IV. Is this an expansion of an existing project? _____Yes _____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. . ***Attached***

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. ***Attached***

VII. Attach data on the proposed operation, including:

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, . ***Attached***

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.

IX. Describe the proposed stimulation program, if any.

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

*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.

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.

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

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: ***John Worrall*** TITLE: ***Manager***

SIGNATURE: _____ DATE: ***2/23/2017***

E-MAIL ADDRESS: ***jworrall@manzanoenergy.com***

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.

Side 1

INJECTION WELL DATA SHEET

OPERATOR: ***Manzano, LLC (formerly Armstrong Energy)***

WELL NAME & NUMBER: ***Old Hippie SWD #1***

WELL LOCATION:	***2035 Fsl, 2122 Fwl***	***K***	***32***	***T6S***	***R34E***
	FOOTAGE LOCATION	UNIT LETTER	SECTION	TOWNSHIP	RANGE

WELLBORE SCHEMATIC (See Attached)

WELL CONSTRUCTION DATA

Surface Casing@40 feet

Hole Size: ***17 ½"*** Casing Size: ***13 3/8"***

Cemented with: ***25 sx***. ***or*** _____ ft^3

Top of Cement: Surface Method Determined: ***Circulated***

Intermediate Casing@2529 feet

Hole Size: ***12 ¼"*** Casing Size: ***8 5/8"***

Cemented with: ***1145 sx.*** ***or*** _____ ft^3

Top of Cement: ***Surface*** Method Determined: ***Circ 110 sxs.***

Production Casing

TD of 8700 feet. Did not originally run casing. Plan 8080 feet.

Hole Size: 7 7/8" Casing Size: 5 ½" (planned)

Cemented with: ***1425 sxs (planned).*** ***or*** _____ ft^3

Top of Cement: Surface (Planned) Method Determined: _____

Total Depth: ***8080 ft casing, 8700 TD***

Injection Interval

8080 to 8700 feet (Openhole)

INJECTION WELL DATA SHEET

Tubing Size: ***4" Flush Joint (11#/ft)***

Type of Packer: ***Nickel plated X1 Aeroset***

Packer Setting Depth: ***8050 feet***

Other Type of Tubing/Casing Seal (if applicable): ***None***

Additional Data

1. Is this a new well drilled for injection? ***No***

   If no, for what purpose was the well originally drilled? ***Exploratory Test resulted in dry hole***

2. Name of the Injection Formation: ***Devonian***
3. Name of Field or Pool (if applicable): ***Wildcat***

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. ***None***

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

_____

_____

_____

Date: February 23, 2017

Form C-108 Responses

Application for Authorization to Inject

I. The purpose of this application is for salt water disposal. This application should qualify for administrative approval.

II. II. Operator: Manzano, LLC, P O Box 1737, Roswell, NM 88202, Contact Mike Hanagan, 575-623-1996; cell 575-420-8821.

III. The Injection Well Data Sheet is attached.

IV. This is not an expansion of an existing project.

V. The Well Radius Map is attached.

VI. Within the area of review there are two dry holes that went to the depth of the Devonian injection interval. Shown on the well data sheet is the current and proposed well data for the proposed injection well. Also shown is a former 1957 dry hole drilled by Magnolia. Magnolia drill stem tested the Devonian from 8400 to 8439 feet and recovered 4572 feet of salt water. A 30 minute shut in pressure was 3095#. Attached are wellbore diagrams for the plugged and abandoned Magnolia well as well as current and proposed diagrams for the Old Hippie SWD #1.

VII. Data on the proposed operation is as follows.

a. Manzano plans to inject a maximum of 20,000 BWPD, an average of 4000 BWPD, and expects to ultimately inject 5 million barrels of water.

b. The system is closed.

c. The average injection pressure is anticipated to be 500 psi. The maximum injection pressure will be ***1616 psi.***

d. San Andres Injection Fluid: The fluids to be injected will come from further development of the Chaveroo San Andres field. Attached is a field study of the Chaveroo field which shows the produced water is a brine with 165,000 ppm chlorides.

e. Devonian disposal zone: The zone to be injected does not produce within two miles of the proposed well. The formation produces brine water. A DST of the Devonian in the Strata Alondra #1 in Section 17-T7S-R34E shows 80,000 chlorides with a resistivity of .0794 @ 82 degrees. Both the injection fluid and the injection zone formation water are brines.

VIII. The injection zone will be from open hole from 8080 to 8700 in this existing wellbore. The zone is the Devonian formation which is a dolomite. There are no known aquifers below the proposed injection zone. The New Mexico State Engineer's office does not show any water wells in the review area.

IX. Manzano plans to acidize the injection zone with 10,000 gals of 15% HCl acid.

X. The previous operator filed a sonic log, neutron density and resistivity log with the NMOCD. A segment of these logs is attached. A current and proposed wellbore diagram is attached.

XI. The New Mexico State Engineer's office indicates there are no water wells (PODS) in the review area. (Copy attached)

XII. We have examined all available geologic and engineering evidence and do not see any faulting or other evidence of a hydrologic connection between the injection zone and underground sources of drinking water.

XIII. A Lease Map is attached. Proof of notice has been sent to Armstrong Energy, of P O Box 1973, Roswell, NM 88202, who is the owner of deep rights under the leases within the review area. Proof of notice has also been sent to the surface owner, George Hay, LLC of 1728 Avenue Q, Portales, NM 88130. A memorandum of a salt water disposal agreement between Manzano, LLC and George Hay is attached. Manzano, LLC is the operator of the shallow leases within the review area. Copies of the Form C-108 and this application and attachments have been sent to the State of New Mexico, Commissioner of Public Lands, P O Box 1148, Santa Fe, New Mexico.

Legal notice has been submitted for publication in Eastern New Mexico News in Roosevelt County, NM. A copy is attached.

Thank you for your review of this proposal.

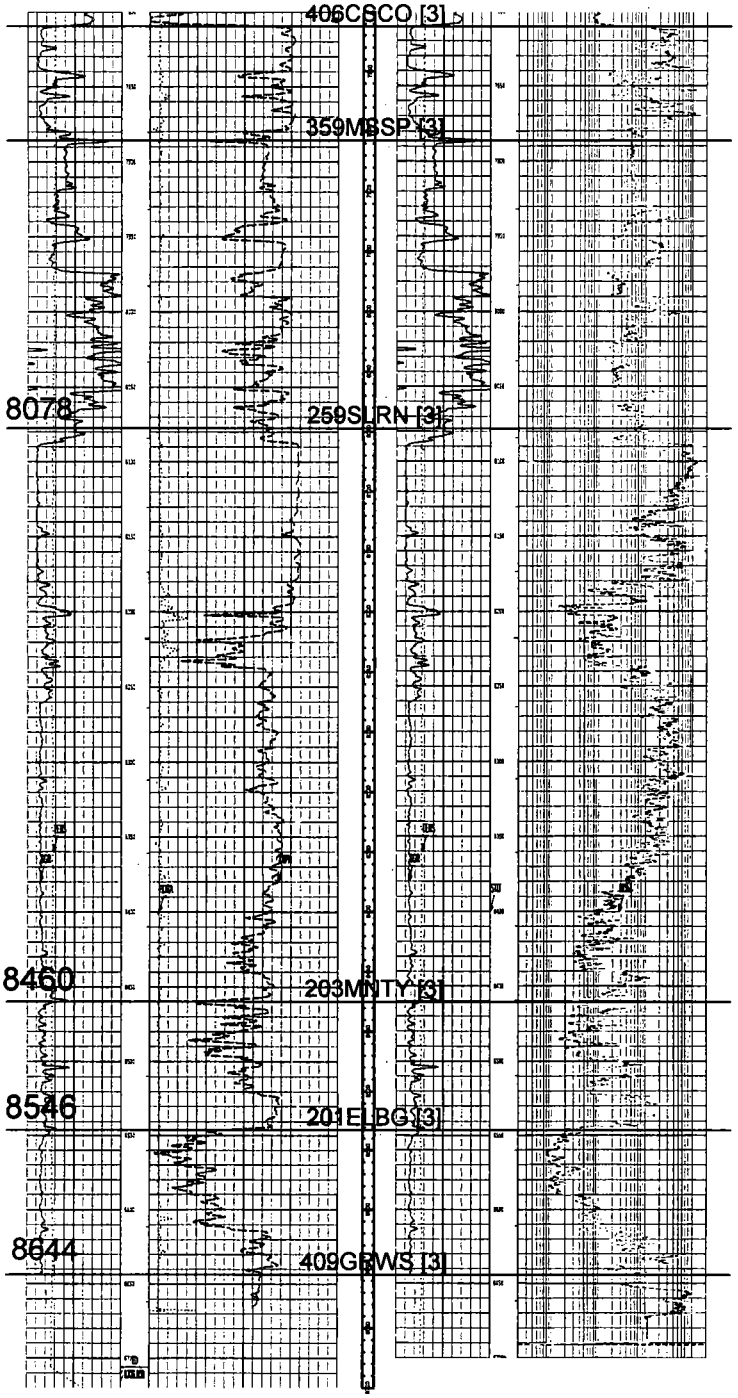
Sincerely,

John Worrall
Manzano, LLC

Attachments

1. Injection Well Data Sheet
2. Well Data Sheet
3. Old Hippie Current Wellbore diagram
4. Old Hippie Proposed Wellbore Diagram
5. Magnolia Vallie Whitehead #1 wellbore diagram
6. Well Radius Map
7. Injection water analysis from the Chaveroo field study published by the Roswell Geological Society.
8. Lease Map.
9. Copy of the Legal Notice published in the Eastern New Mexico News.
10. Copies of notice to George Hay and Armstrong Energy.
11. Memorandum of the salt water disposal agreement.
12. New Mexico State Engineer's Office POD Location Report

ARMSTRONG ENGY CORP
OLD HIPPIE
1
30041209610000



5 1/2" 17" Casing to be set at 8080 feet.
4" 11# flush jt tubing will be set into a Nickel plated X1 Aeroset Packet at 8050 feet.

Information	***Well Data Sheets***		
Type	Injection Well (Current)	Injection Well (Proposed)	Penetration in Area of Review, Dry Hole
Well Name	Manzano, LLC Old Hippie SWD #1	Manzano, LLC Old Hippie SWD #1	Magnolia Vallie Whitehead #1
Location	32-T6S-R34E, 2035 Fsl, 2122 Fwl	32-T6S-R34E, 2035 Fsl, 2122 Fwl	32-T6S-R34E, 1980 Fsl, 660 Fwl
Surface Hole Size	17 1/2"	17 1/2"	17 1/2
Surface Casing Depth	40	40	442
Surface Casing Size	13 3/8"	13 3/8"	13 3/8"
Surface Cement	25 sxs	25 sxs	425 sxs
Cement Top	Surface	Surface	Surface
Intermediate Hole Size	12 1/4"	12 1/4"	12 1/4"
Intermediate Casing Depth	2529 ft	2529 ft	4180
Intermediate Casing Size	8 5/8"	8 5/8"	8 5/8"
Intermediate Cement	1145 sxs	1145 sxs	1600 sxs
Intermediate Cement Top	Surface	Surface	205 ft (temp survey)
Production Hole Size	7 7/8"	7 7/8"	7 7/8
Production Casing Depth	Did not run pipe	8080	8100
Production Casing Size		5 1/2"	5 1/2"
Production Cement		1425 sxs	260 sxs
Production Cement Top		Surface	6880
Total Depth	8700	8700	8772
Tubing Depth	None P&A 2014	8050	None P&A 1957
Tubing Size		4" Flush joint 11#/ft	
Packer Type		Nickel plated X-1 Aeroset	
Packer Depth		8050	
Surface Casing Pulled	None Pulled	NA	None Pulled
Intermediate Casing Pulled	None Pulled	NA	None Pulled
Production Casing Pulled	None set	NA	6800 feet
Cement Plugs	8247-8147, 7455-7355, 6666-6566,	NA	8154-7950, 7600-7250, 4200-4050,
	4608-4508, 3270-3170, 2585-2485,	NA	442-surface.
	1800-1900, 350-450, 100 to 0.	NA	

MANZANO - LLC

WELLBORE Diagram (Proposed Injection Wellbore)

OLD HIPPIE#1

API #30-041-20961
2035' FSL & 2122' FWL
SEC 32-T6S-R34E
ROOSEVELT, NEW MEXICO
GL Elevation: 4336'
KB Elevation:

Tubulars			
	Size	Grade - Wt	Depth Set (RKB)
Surf.	13 3/8"	J-55 - 32#/ft	404'
Surf.	8 5/8"	J-55 - 24#/ft	2380'
Surf.	8 5/8"	J-55 - 32#/ft	2530'
Prod.	5 1/2"	N80 & P-110 - #17.0/ft	8080'
Tbg	4"	N80 11#/ft FJ	8050'

Rustler @ 1852'

San Andres @ 3208'
8 5/8" 24 & 32#/ft J55 @ 2530'
Cement w/1145sx - Circ 110sx

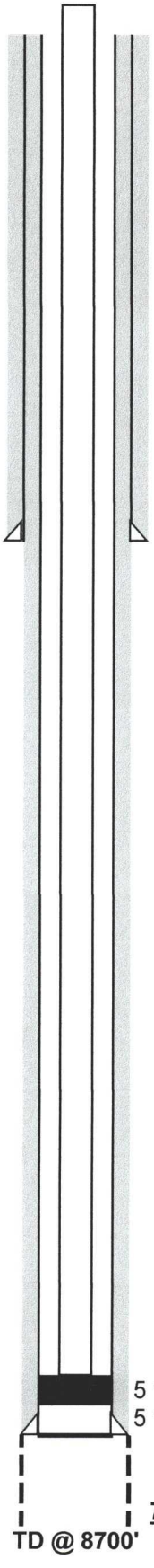
Abo @ 6630'

Wolfcamp @ 7400'

Cisco @ 7810'

Mississippian @ 7886'
Woodford @ 7974'
Siluro-Devonian @ 8078'

Granite Wash @ 8644'



4" 11#/FT FJ lined tubing @ 8050'
5 1/2" Nickel Plated X1 Arrowset Injection Packer @ 8050'
5 1/2" 17# N80 & P110' @ 8080'
Cement w/1200sx - Circulate to Surface

7 7/8" OPEN HOLE COMPLETION f/8080'-8700'

TD @ 8700'

MANZANO - LLC

WELLBORE Diagram (Existing as of 7/27/14)

OLD HIPPIE#1

API #30-041-20961
2035' FSL & 2122' FWL
SEC 32-T6S-R34E
ROOSEVELT, NEW MEXICO
GL Elevation: 4336'
KB Elevation:

35sk Surface Plug f/surf-100'

35sk Plug f/350-450'

40sk Plug f/1800-1900'

Rustler @ 1852'

San Andres @ 3208'

8 5/8" 24 & 32#/ft J55 @ 2530'
Cement w/1145sx - Circ 110sx

60sk Shoe Plug f/2485-2585'

50sk Plug f/3170'-3270'

50sk Plug f/4508'-4608'

7 7/8" hole f/3469'-9503'

Abo @ 6630'

50sk Plug f/6566'-6666'

Wolfcamp @ 7400'

40sk Plug f/7355'-7455'

Cisco @ 7810'

Mississippian @ 7886'

40sk Plug 8147'-8247'

Woodford @ 7974'
Siluro-Devonian @ 8078'
Granite Wash @ 8644'

TD 7 7/8" hole @ 8700'

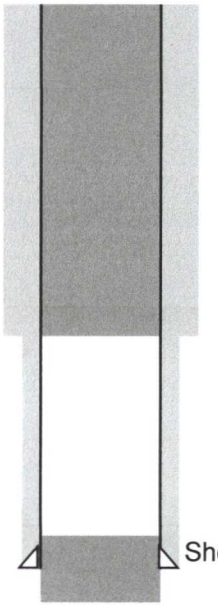
MANZANO - LLC
WELLBORE Diagram

MAGNOLIA VALLIE WHITEHEAD #1

API # 3004100147
1980' FSL & 660' FWL
SEC 32-T6S-R34E
ROOSEVELT, NEW MEXICO
GL Elevation: 4336'
KB Elevation:

Rustler @ 1840'

13 3/8" @ 442'
Cement w/425'sx - circulated



Surface Plug f/Surf-442'

San Andres @ 3214'

8 5/8" @ 4180'
Cement w/1600sx
TOC @ 205 by T-Survey

Shoe Plug f/4050'-4200'

7 7/8" Open hole f/4180'-6800'

5 1/2" casing pulled f/6800'

Plug f/7250'-7600'

Wolfcamp @ 7340'

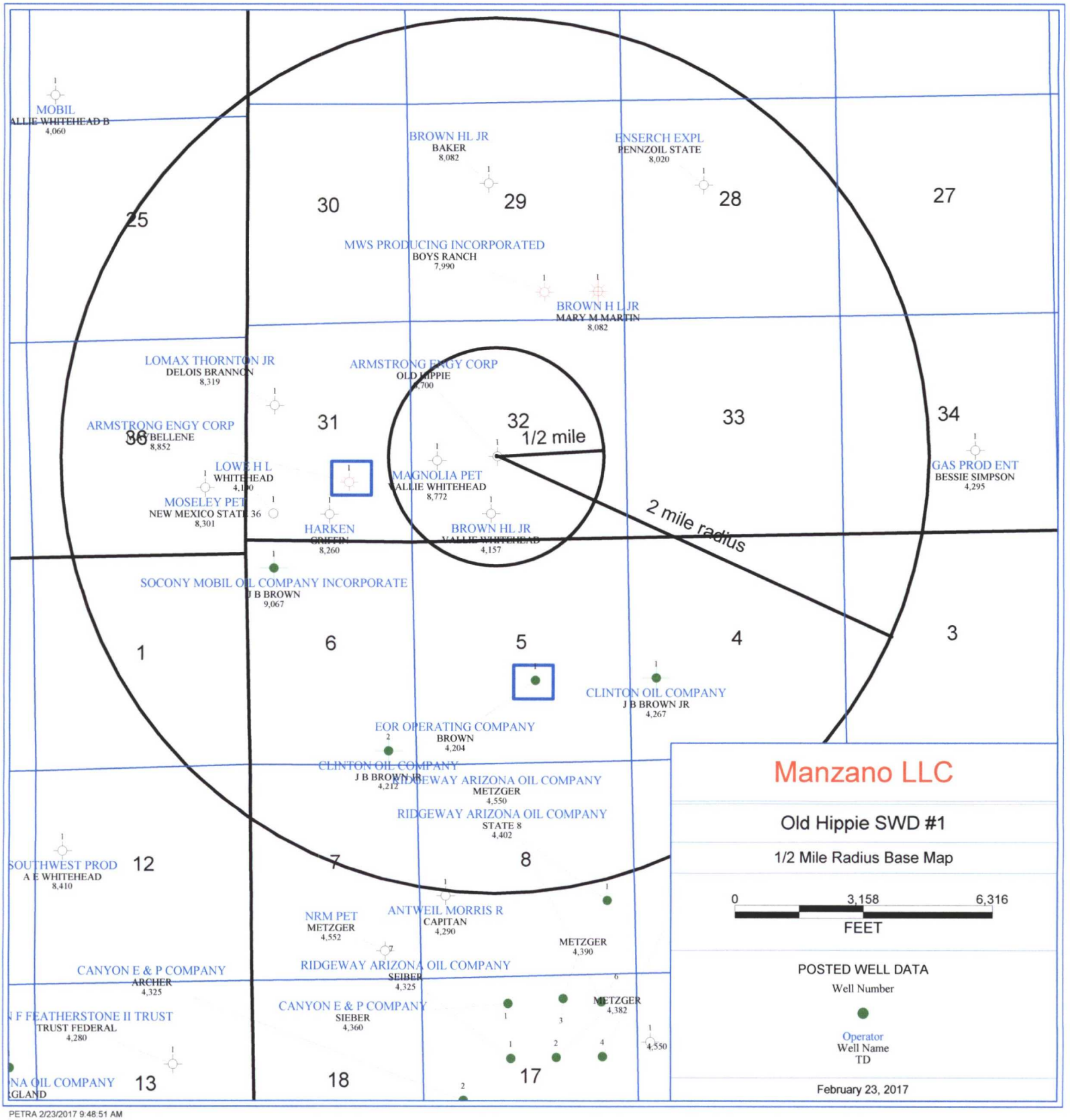
Cisco @ 7677'

Plug f/7950'-8154'

5 1/2" @ 8100'
Cement w/260sx - TOC @ 6880'

Woodford @ 8138'
Siluro-Devonian @ 8248'

TD @ 8772'



Manzano LLC

Old Hippie SWD #1

1/2 Mile Radius Base Map

0 3,158 6,316

FEET

POSTED WELL DATA

Well Number

Operator
Well Name
TD

February 23, 2017

PETRA 2/23/2017 9:48:51 AM

ROSWELL GEOLOGICAL SOCIETY SYMPOSIUM

Author: George L. Scott, Jr.
Affiliation: Consulting Geologist
Date: November 1966

Field Name: Chaveroo
Location: T-7,8-S, R-33, 34-E
County & State: Chaves & Roosevelt Counties, New Mexico

Discovery Well: Champlin Pet. Co. & Warren American Oil Co. #1 Hondo State, SE/4 NE/4 Section 32, T-7-S, R-33-E. Completed 3/20/65 IPP 148 BOPD + 2 BWPD, GOR 810.

Exploration Method Leading to Discovery: 80% subsurface 20% seismic

Pay Zone: Top of field pay is at 4184 (+255)

Formation Name: San Andres Depth & Datum Discovery Well: Top perf in disc. well 4299.

Lithology Description: Tan to brown, fine to medium crystalline dolomite with scattered anhydrite inclusions, and vugular, inter-crystalline and fracture porosity. Most wells complete from 1st to 2nd porosities; scattered wells also perf 3rd porosity. The net porosity is based on a cut-off of 4% and covers only 1st and 2nd porosities. (Cont. under Type Trap)

Approximate average pay: 210 gross 40 net Productive Area 11,000 acres (on Nov. 1, 1966)

Type Trap: Stratigraphic. Porosity and permeability fails up dip along the north and west margin of the field to provide the trap.

Pay Zone (cont. from above). Net porosity map is not a strict net pay map as there are wells where extensive fracturing has lowered the porosity cut-off to 2 1/2%. It also includes porosity in the 2nd porosity interval at the south and southeast field margin that is below the irregular oil-water contact.

Reservoir Data: 6 % Porosity, .7 Md Permeability, 25 % Sw, 16 % So

Oil: 26° API, black, sour

Gas: GOR 400 to 1000

Water: 66,600 Na+K, 27,680 Ca, 4860 Mg, 165,600 Cl, 200 SO_4, 240 HCO_3, Fe

FM WATER

Specific Gravity 1.174 Resistivity .035 ohms @ 110 °F

Initial Field Pressure: 1340 psi @ +140 datum Reservoir Temp. 110°F

Type of Drive: Solution gas

Normal Completion Practices: Set casing through pay and selectively perforate with one shot per interval. Acidize with 2000 gallons of acid, and sand fracture with 30,000 gallons of oil and 30,000 pounds of sand.

Type completion: Both flowing and pumping Normal Well Spacing 40 Acres

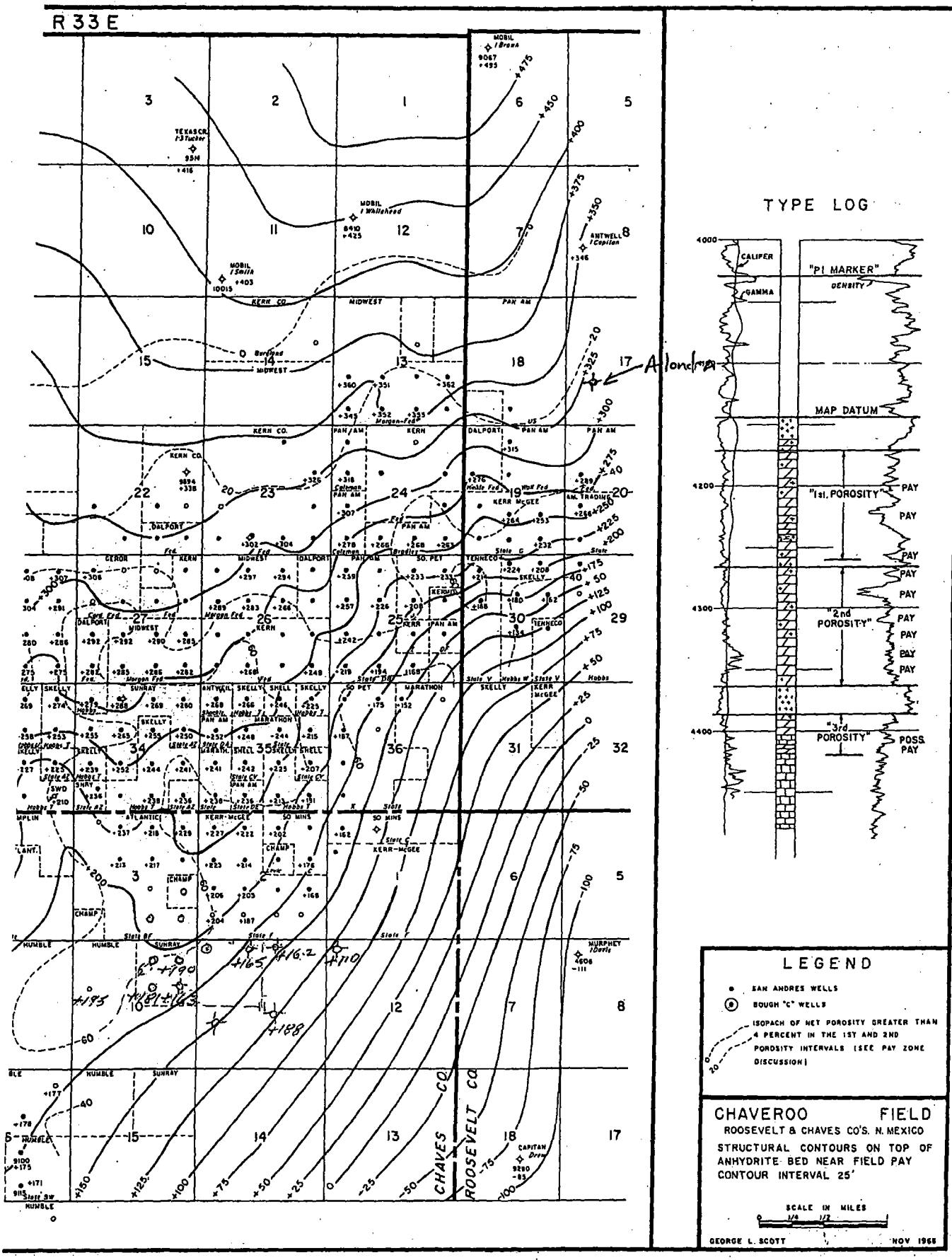
Deepest Horizon Penetrated & Depth: Bough "C" at 9100' in the discovery well. At the south end of the field several abandoned Bough "C" wells have been plugged back to the San Andres

Other Producing Formations in Field: None within the area of San Andres production, however, Bough "C" production in the Tobac field adjoins the Chaveroo San Andres field on the south.

Production Data:

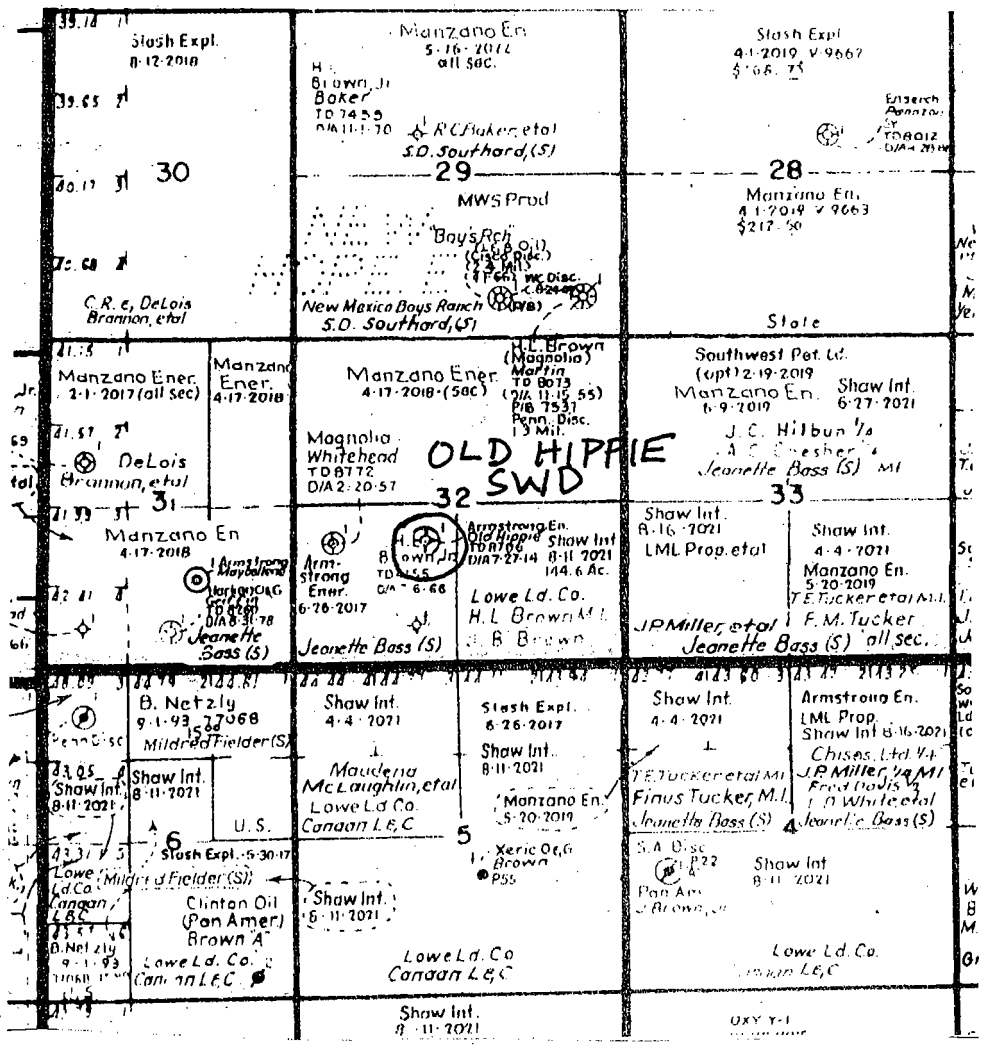
YEAR	TYPE	No. of wells @ yr. end Prod.	S.I.or Abd.	PRODUCTION OIL IN BARRELS GAS IN MMCF ANNUAL	CUMULATIVE	YEAR	TYPE	No. of wells @ yr. end Prod.	S.I.or Abd.	PRODUCTION OIL IN BARRELS GAS IN MMCF ANNUAL	CUMULATIVE
1965	OIL	45		166,896	166,896		OIL				
	GAS			179,400	179,400		GAS				
1966*	OIL	241		1,474,705	1,641,601		OIL				
	GAS			1,084,527	1,263,927		GAS				
	OIL						OIL				
	GAS						GAS				
	OIL						OIL				
	GAS						GAS				

* 1966 production to September 30, 1966.


R 33 E
TYPE LOG
CALIPER
GAMMA
"P1 MARKER"
DENSITY
MAP DATUM
"1st. POROSITY"
"2nd POROSITY"
"3rd POROSITY"
PAY
POSS PAY
4000
4200
4300
4400
Alondra
CHAVES CO.
ROOSEVELT CO.
LEGEND
SAN ANDRES WELLS
BOUGH "C" WELLS
ISOPACH OF NET POROSITY GREATER THAN 4 PERCENT IN THE 1ST AND 2ND POROSITY INTERVALS (SEE PAY ZONE DISCUSSION)
CHAVEROO FIELD
ROOSEVELT & CHAVES CO'S. N. MEXICO
STRUCTURAL CONTOURS ON TOP OF ANHYDRITE BED NEAR FIELD PAY
CONTOUR INTERVAL 25'
SCALE IN MILES
0 1/4 1/2
GEORGE L. SCOTT
NOV 1968

LEASE MAP.

The proposed salt water disposal well is the Manzano, LLC Old Hippie #1 located in Section 32-T6S-R34E at 2035 Fsl and 2122 Fwl.



LEGAL NOTICE

Notice is hereby given of the application of Manzano, LLC, P O Box 1737, Roswell, New Mexico to the Oil Conservation Division, and to Commissioner of Public Lands, State of New Mexico, for approval to reenter and convert the Old Hippie #1 well to a salt water disposal well in the Devonian formation. The surface is owned by George Hay of Portales, New Mexico.

The Manzano, LLC Old Hippie SWD #1, API#3004120961, is located at 2035 Fsl, 2122 Fwl in Section 32, Township 6 South, Range 34 East of Roosevelt County, New Mexico.

The injection interval is the Devonian formation present at depths between 8080 and 8700 feet. The maximum injection pressure it to be 1616 psi and the maximum injection rate is 20,000 BWPD.

Interested parties should file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Drive, Santa Fe, NM 87505 within fifteen days.

Inquiries regarding this application should be directed to Manzano, LLC Attention: Mike Hanagan, P O Box 1737, Roswell, New Mexico 88202.

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

No PODs found

POD Search:

POD Basin: CAUSEY LINGO

UTM NAD83 Radius Search (in meters):

Easting (X): 639712 Northing (Y): 3715220 Radius: 1760

McMillan, Michael, EMNRD

From: John Worrall <jworrall@manzanoenergy.com>
Sent: Thursday, March 2, 2017 2:23 PM
To: Goetze, Phillip, EMNRD
Cc: Jones, William V, EMNRD; McMillan, Michael, EMNRD; 'Mike Hanagan'
Subject: RE: Old Hippie SWD Well No.1, Alondra SWD #1
Attachments: oLD hIPPIE SWD_Proposed SWD Wellbore Diagram.xls; Old Hippie Injection Sheets.pdf

Phillip,

Per our discussions today, attached are the revised proposed wellbore diagram and injection sheets for our application. Please let me know if any additional information is required. Thank you.

Sincerely,

John Worrall

From: Goetze, Phillip, EMNRD [mailto:Phillip.Goetze@state.nm.us]
Sent: Thursday, March 2, 2017 10:27 AM
To: John Worrall <jworrall@manzanoenergy.com>
Cc: Jones, William V, EMNRD <WilliamV.Jones@state.nm.us>; McMillan, Michael, EMNRD <Michael.McMillan@state.nm.us>
Subject: RE: Old Hippie SWD Well No.1, Alondra SWD #1

Mr. Worrall:

The Division has a standing policy not to permit disposal in the Ellenburger Formation due to its high probability of having hydraulic connectivity with deeper units, including the granite wash and associated Precambrian surface. Historical injection into the Ellenburger in Texas along with recent studies of the paleostructures of the Ellenburger (such as Loucks and Anderson (1985) and Loucks and Mescher (2001)) have shown vertical migration of injection fluids to lower units even where the immediate borehole conditions have indicated a lower permeability barrier. The top of Montoya represents the target for the top of the cement plug due to the inability to assess the quality of the bond for this plug once in place. This would mean a PBTD of approximately 8460 ft.

Additionally, there must be some conformity in the notice description and the lithologic description provided in the C-108 application. The content of the C-108 and the copy of the published notice states an injection interval being the "Devonian formation". Yet, the lithology of the injection interval being proposed for this well includes the Silurian (Fusselman), Ordovician Montoya, and the Cambrian granite wash. This alone is basis for rejection of the proposed interval due to improper notice.

Historically, the Division will include the Fusselman with Devonian as being transitional and approve this section as the injection interval. Therefore, I would suggest this is Manzano's best solution to the current situation and recommend a redesign of the proposed well completion with a PBTD of 8460 ft BGS. Please contact me with any questions regarding the content of this correspondence. PRG

Phillip Goetze, PG
Engineering Bureau, Oil Conservation Division
New Mexico Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive, Santa Fe, NM 87505
Direct: 505.476.3466

C-108 Review Checklist: Received 2/27 Add. Request: 2/28/2017 Reply Date: 3/1/2017 Suspended: ________ [Ver 15]

ORDER TYPE: WFX / PMX / (SWD) Number: ________ Order Date: ________ Legacy Permits/Orders: ________

Well No. 1 Well Name(s): Old Hippie

API : 30-0 41-20761 Spud Date: 7/14/2017 New or Old: N (*UIC Class II Primacy 03/07/1982*)

Footages 2035 FSL 2122 FWL Lot ___ or Unit K Sec 32 Tsp 6S Rge 34E County Roosevelt

General Location: 2/4 miles SW/Kenna Pool: SWD Pool No.: ________

BLM 100K Map: Elida Operator: Manzano LLC OGRID: 231429 Contact: Mike Hanagan, Partner

COMPLIANCE RULE 5.9: Total Wells: 353 Inactive: 0 Fincl Assur: OK Compl. Order? N/A IS 5.9 OK? Y Date: 3-6-2017

WELL FILE REVIEWED ○ Current Status: P & A

WELL DIAGRAMS: NEW: Proposed ○ or **RE-ENTER:** Before Conv. ○ After Conv. ○ Logs in Imaging: CN-DL; DLL; BHCS

Planned Rehab Work to Well: Cement from 8700 (TD) to 8460

Well Construction Details	Sizes (in) Borehole / Pipe	Setting Depths (ft)		Cement Sx or Cf	Cement Top and Determination Method
Planned __or Existing __Surface	17 1/2 / 13 3/8	404	Stage Tool	25	Surface
Planned__or Existing __ Interm/Prod	12 1/4 / 8 5/8	2529		1175	Surface/Visual
Planned__or Existing __Interm/Prod	7 7/8 / 5 1/2	8050		1425	Surface/Visual
Planned__or Existing __ Prod/Liner					
Planned__or Existing __ Liner					
Planned__or Existing (OH) PERF	8050-8460		Inj Length		

Injection Lithostratigraphic Units:	Depths (ft)	Injection or Confining Units	Tops
Adjacent Unit: Litho. Struc. Por.		WC	7578
Confining Unit: Litho. Struc. Por.		DV	8081
Proposed Inj Interval TOP:	8080	(MF)	8460
Proposed Inj Interval BOTTOM:	8460		
Confining Unit: Litho. Struc. (Por.)			
Adjacent Unit: Litho. Struc. Por.			

Completion/Operation Details:

Drilled TD 8700 PBTD ________

NEW TD ________ NEW PBTD 8460

NEW Open Hole ✓ or NEW Perfs ○

Tubing Size ______ in. Inter Coated? ______

Proposed Packer Depth 8050 ft

Min. Packer Depth 7970 (100-ft limit)

Proposed Max. Surface Press. 1616 psi

Admin. Inj. Press. 1616 (0.2 psi per ft)

AOR: Hydrologic and Geologic Information

POTASH: R-111-P NA *Noticed?* ___ **BLM Sec Ord** ○ **WIPP** ○ *Noticed?* ___ **Salt/Salado T:** ___ **B:** ___ **NW: Cliff House fm** ___

FRESH WATER: Aquifer NA Max Depth ________ **HYDRO AFFIRM STATEMENT By Qualified Person** ✓

NMOSE Basin: Clovis **CAPITAN REEF:** thru adj (NA) **No. Wells within 1-Mile Radius?** 0 FW Analysis

Disposal Fluid: Formation Source(s) San Andres Analysis? Y On Lease ○ Operator Only ○ or Commercial ✓

Disposal Int: Inject Rate (Avg/Max BWPD): 20K/40K Protectable Waters? NA Source: ________ System: Closed or Open

HC Potential: Producing Interval? N/A Formerly Producing? ______ Method: Logs/DST/P&A/Other DST 2-Mile Radius Pool Map ✓

AOR Wells: 1/2-M Radius Map? Y Well List? Y Total No. Wells Penetrating Interval: 1 Horizontals? ________

Penetrating Wells: No. Active Wells 0 Num Repairs? ___ on which well(s)? ________ Diagrams? ___

Penetrating Wells: No. P&A Wells 1 Num Repairs? ___ on which well(s)? ________ Diagrams? Y

NOTICE: Newspaper Date March 1, 2016 Mineral Owner Armstrong Energy Surface Owner Grey ... N. Date [illegible]

RULE 26.7(A): Identified Tracts? ______ Affected Persons: Armstrong Energy N. Date ______

Order Conditions: Issues: ________

Add Order Cond: ________