

8/14/09

DATE IN 6-29-09	SUSPENSE	ENGINEER Jones	LOGGED IN 6-27-09	TYPE SWD 1186	PT&W APP NO. 0918049902
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ABOVE THIS LINE FOR DIVISION USE ONLY

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



Eddy Co., NM  
 30-015-05819  
 Mesquite SWD, Inc.  
 06/10/16/1968)

## ADMINISTRATIVE APPLICATION CHECKLIST

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

### Application Acronyms:

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

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

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

Check One Only for [B] or [C]

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

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

- [D] Other: Specify** \_\_\_\_\_

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

- [A]** ☐ Working, Royalty or Overriding Royalty Interest Owners
- [B]** ☐ Offset Operators, Leaseholders or Surface Owner
- [C]** ☐ Application is One Which Requires Published Legal Notice
- [D]** ☐ Notification and/or Concurrent Approval by BLM or SLO  
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office
- [E]** ☐ For all of the above, Proof of Notification or Publication is Attached, and/or,
- [F]** ☐ Waivers are Attached

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

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

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

Print or Type Name

Signature

Title

Date

e-mail Address



Kay C. Havenor, Ph.D

Office: 575-622-0283  
e-mail: KHavenor@GeoResources.com  
200 West First Street, Suite 747  
Roswell, New Mexico 88201

June 25, 2009

New Mexico Oil Conservation Division  
Engineering Bureau  
1220 South St. Francis Drive  
Santa Fe, NM 87505

Re: C-108 Submittal to OCD  
Mesquite SWD, Inc  
Big Eddy SWD No.1  
660 FSL & 660 FEL  
Sec. 3, T20S-R31E, Eddy Co., NM

Attached is a C-108 application for disposal into a re-entry of the referenced well API 30-015-05819. This well will be used to dispose of both oil/gas related produced water and Class I non-hazardous, non-toxic salt water.

A separate copy is being sent to the Artesia District OCD office.

Preliminary contact has been made with Mr. John Hall, NMED, and Mr. Carl Chaves, OCD.

Any comments or questions can be addressed to the above address.

Respectfully yours,

A handwritten signature in black ink that reads "Kay C. Havenor". The signature is written in a cursive, flowing style.

Kay Havenor, PG

RECEIVED  
2009 JUN 29 PM 1 05

**APPLICATION FOR AUTHORIZATION TO INJECT**

I. PURPOSE: \_\_\_\_\_ Secondary Recovery \_\_\_\_\_ Pressure Maintenance   X   Disposal \_\_\_\_\_ Storage  
Application qualifies for administrative approval?   X   Yes \_\_\_\_\_ No

II. OPERATOR:   Mesquite SWD, Inc.  

ADDRESS:   P.O. Box 1479 Carlsbad, NM 87221  

CONTACT PARTY:   Kay Havenor   PHONE:   575-622-0283  

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: \_\_\_\_\_

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.

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.

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,
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).

\*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:   Kay Havenor   TITLE:   Agent  

SIGNATURE:   *Kay Havenor*   DATE:   6/23/2009  

E-MAIL ADDRESS:   KHavenor@georesources.com   (575) 622-0283

\* 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: \_\_\_\_\_

### III. WELL DATA

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

- (1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.
- (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
- (3) A description of the tubing to be used including its size, lining material, and setting depth.
- (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

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

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

- (1) The name of the injection formation and, if applicable, the field or pool name.
- (2) The injection interval and whether it is perforated or open-hole.
- (3) State if the well was drilled for injection or, if not, the original purpose of the well.
- (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
- (5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

### XIV. PROOF OF NOTICE

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

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

- (1) The name, address, phone number, and contact party for the applicant;
- (2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;
- (3) The formation name and depth with expected maximum injection rates and pressures; and,
- (4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

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

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

# INJECTION WELL DATA SHEET

OPERATOR: Mesquite SWD, Inc.

WELL NAME & NUMBER: Big Eddy SWD No. 1

WELL LOCATION: 660' FSL & 660

FEL 0 3 20S 31E SECTION TOWNSHIP

RANGE

FOOTAGE LOCATION

UNIT LETTER

## WELLBORE SCHEMATIC

## WELL CONSTRUCTION DATA

### Surface Casing

Hole Size: 17-1/2" Casing Size: 13-3/8"

Cemented with: 750 sxs or ft<sup>3</sup>

Top of Cement: Circulated Method Determined:

### Intermediate Casing

Hole Size: 12-1/4" Casing Size: 9-5/8"

Cemented with: 750 sxs or ft<sup>3</sup>

Top of Cement: Circulated Method Determined:

See attached detail bore hole diagram  
Proposed Re-entry Plan

1<sup>st</sup> Production Casing

Hole Size: 8-3/4" Casing Size: 7-5/8"

Cemented with: See Re-entry plan *or*        ft<sup>3</sup>

Top of Cement: See Re-entry plan Method Determined:       

**Note:** Pan American reported 7-5/8" and 5-1/2" combined cemented w/815 sxs.

See attached detail bore hole diagram  
Proposed Re-entry Plan

Production Casing Liner

Hole Size: 6-5/8" Casing Size: 5-1/2" N80 20#

Cemented with: See Re-entry plan *or*       

Top of Cement: See Re-entry plan Method Determined:       

Total Depth: 14,205'

Injection Interval

Base of 5-1/2" casing 12,950'        feet to Open hole TD 14,205'

(Perforated or Open Hole; indicate which)

INJECTION WELL DATA SHEET

Tubing Size: 3-1/2" L80 12,95# and 9.3# upset Lining Material: IPC 1850 coated

Type of Packer: Lok-Set

Packer Setting Depth: approx 12,950'

Other Type of Tubing/Casing Seal (if applicable): N/A

Mesquite SWD, Inc. Big Eddy SWD No.1  
660 FSL & 660 FEL  
Sec. 3, T20S-R31E, Eddy Co., NM

**Diagrams of Wells within the ½- mile AOR and the 1-mile radius of the proposed SWD well**

This is the well to be re-entered:

**PLUG AND ABANDON WELL DIAGRAM**

API: 3001505819

Operator: Pan American

Lease: Big Eddy Unit

Location: Sec 3, T20S-R31E Eddy Co., NM

Footage: 660 FSL, 660 FEL

Well No: 1

KB: 3514

GL: 3494

Spud date: November 23, 1961

Plugged date: March 13, 1964

MSL of TD: -10691

**Surface Csg**

Size: 13-3/8"  
Set @: 440  
Sxs cmt: 750  
Circ: Yes  
TOC:  
Hole Size: 17-1/2"

**Intermediate Csg**

Size: 9-5/8"  
Set @: 2365  
Sxs cmt: 750  
Circ: N/R  
TOC:  
Hole Size: 12-1/4"

**1st Production Csg**

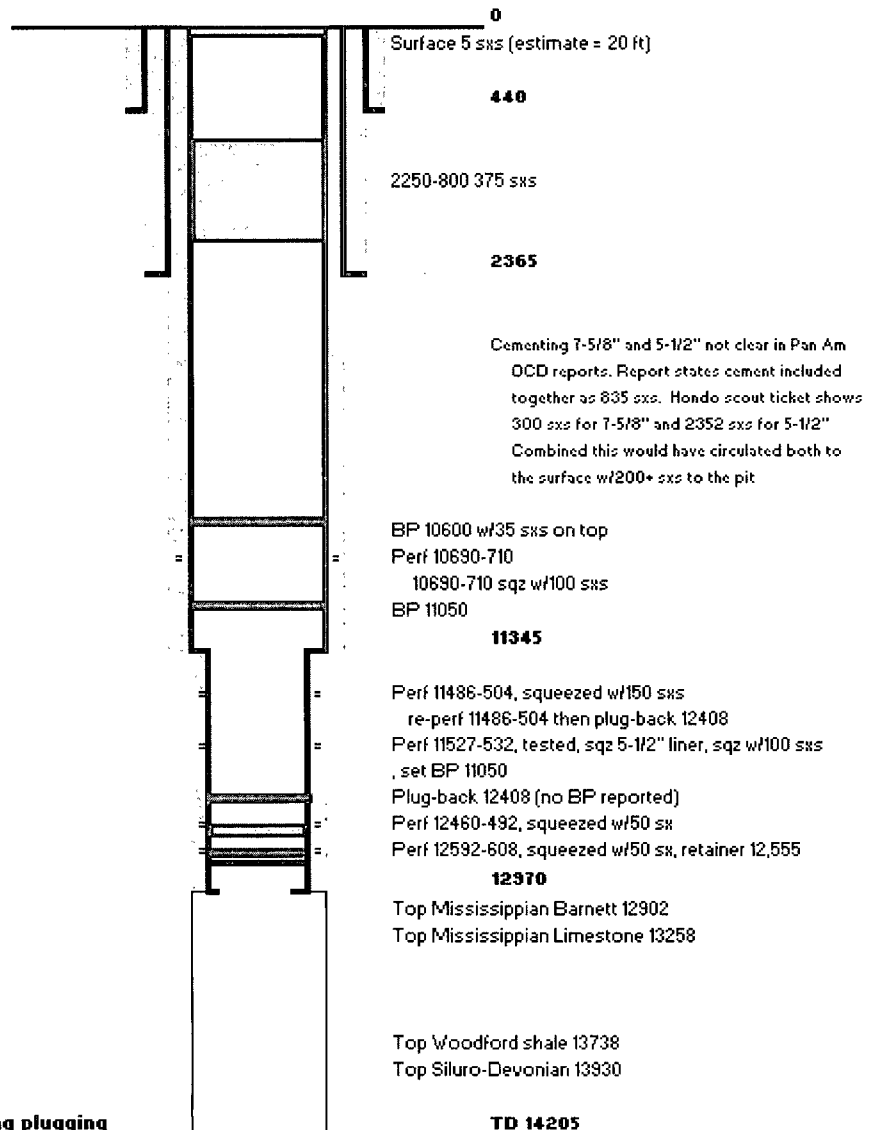
Size: 7-5/8"  
Set @: 11345  
Sxs cmt: 300  
Circ: No  
TOC: N/R  
Hole Size: 8-3/4"

**2nd Production Csg**

Size: 5-1/2" Liner  
Set @: 11345 to 12970  
Sxs cmt: 2352  
Circ:  
TOC: to 7-5/8"  
Hole Size: 6-3/4"

Hole size to TD: 6-3/4"

**Note: No casing was pulled during plugging**



Not to scale

Mesquite SWD, Inc.  
 Big Eddy SWD No.1  
 660 FSL & 660 FEL  
 Sec. 3, T20S-R31E, Eddy Co., NM

PROPOSED RE-ENTRY PLAN

API: 3001505513  
 Operator: Mesquite SWD,  
 Lease: Big Eddy SWD (Well No. 1)  
 Location: Sec 3, T20S-R31E Eddy Co., NM  
 Footage: 660 FSL, 660 FEL

GL: 3494

*Original Surface Csg*

Size: 13-3/8"  
 Set @: 440  
 Sxs cmt: 750  
 Circ: Yes  
 TOC:  
 Hole Size: 17-1/2"

*Original Intermediate Csg*

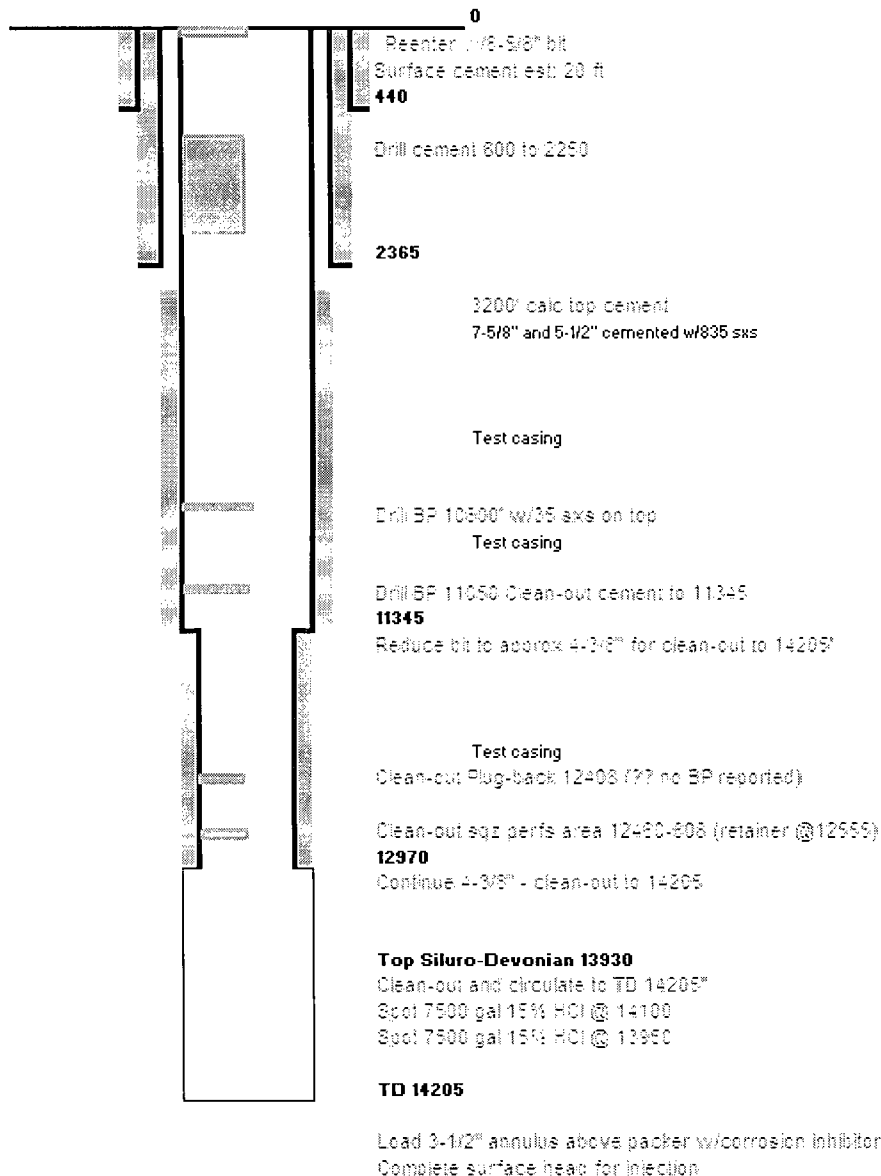
Size: 9-5/8"  
 Set @: 2365  
 Sxs cmt: 750  
 Circ: N/R  
 TOC:  
 Hole Size: 12-1/4"

*Original 1st Production Csg*

Size: 7-5/8"  
 Set @: 11345  
 Sxs cmt: calc 715 sxs  
 Circ: No  
 TOC: N/R  
 Hole Size: 8-2/4"

*Original 2nd Production Csg*

Size: 5-1/2" N80 20# Liner  
 Set @: 11345 to 12970  
 Sxs cmt: calc 120 sxs  
 Circ:  
 TOC: into 7-5/8" annulus  
 Hole Size: 6-5/8"  
 Hole Size: 6-5/8"



Not to Scale

Mesquite SWD, Inc.  
 Big Eddy SWD No.1  
 660 FSL & 660 FEL  
 Sec. 3, T20S-R31E, Eddy Co., NM

PROPOSED COMPLETION PLAN

API: 3001505819  
 Operator: Mesquite SWD.  
 Lease: Big Eddy SWD Well No: 1  
 Location: Sec 3, T20S-R31E Eddy Co., NM  
 Footage: 660 FSL, 660 FEL

GL: 3494

*Original Surface Csg*

Size: 12-3/8"  
 Set @: 440  
 Sxs omit: 750  
 Circ: Yes  
 TOC:  
 Hole Size: 17-1/2"

*Original Intermediate Csg*

Size: 6-5/8"  
 Set @: 2365  
 Sxs omit: 750  
 Circ: W/R  
 TOC:  
 Hole Size: 12-1/4"

*Original 1st Production Csg*

Size: 7-5/8"  
 Set @: 11345  
 Sxs omit: calc 715 (See P&A, diagram notes)  
 Circ: Ho  
 TOC: W/R  
 Hole Size: 6-3/4"

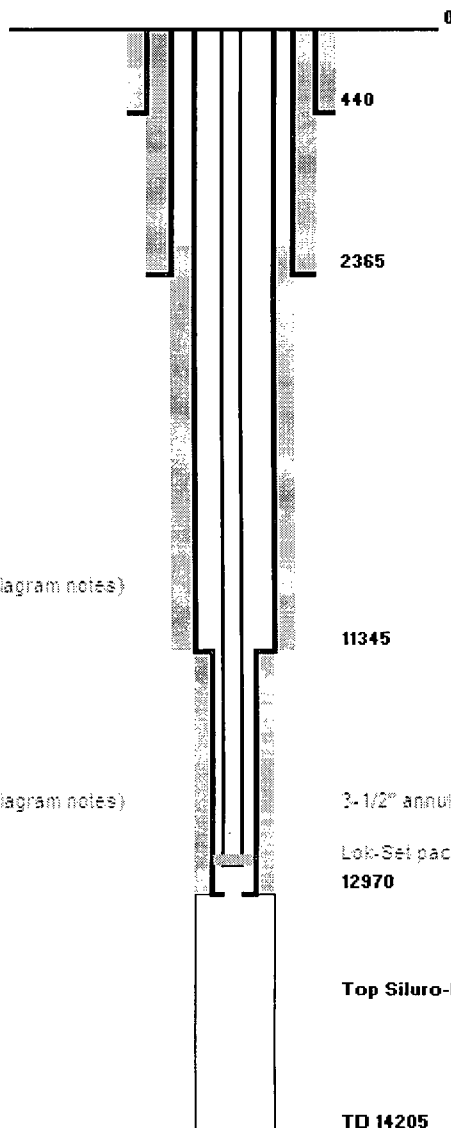
*Original 2nd Production Csg*

Size: 5-1/2" N60 20# Liner  
 Set @: 11345 to 12970  
 Sxs omit: calc 120 (See P&A, diagram notes)  
 Circ:  
 TOC: into 7-5/8" annulus  
 Hole Size: 6-5/8"

Open Hole Size: 6-5/8"

Tubular requirements (made-up):

3-1/2" L80 10.3# IPC 1850 coated 11250'  
 3-1/2" beveled joint L80 9.3# 11250-12950' (1700# IPC 1850 coated  
 Lok-Set packer at base of 5-1/2" casing approx 12950'



440

2365

11345

3-1/2" annulus above packer w/corrosion inhibitor

Lok-Set packer on 3-1/2" approx 12950' in 5-1/2" liner  
 12970

Top Siluro-Devonian 13930

TD 14205

Not to scale

1. Is this a new well drilled for injection? \_\_\_\_\_ Yes ☒ No ☐  
If no, for what purpose was the well originally drilled? Oil-gas test
- 
2. Name of the Injection Formation: Siluro-Devonian
3. Name of Field or Pool (if applicable): \_\_\_\_\_
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. \_\_\_\_\_  
See attached detailed well diagram
- 
5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: All Overlying: Bone Springs, Strawn, and Morrow. All are above 13,000 feet and none are commercial in the 1/2 mile Area of Review. One well located 1-mile west produces (commingled) from the Bone Springs and Strawn.
-

Mesquite SWD, Inc.  
Big Eddy SWD No.1  
660 FSL & 660 FEL  
Sec. 3, T20S-R31E, Eddy Co., NM

**Item VII:**

1. The maximum injected volume is anticipated to be 27,500 BWPD. The average volume is anticipated to be 21,500 BWPD.
2. Injection will be through a closed system.
3. The maximum injection pressure is expected to be 2,500 psig, with an average pressure of 1,500 psig.
4. Class I non-hazardous process water will be approximately 119,500 mg/l TDS (density about 1.09). Conventional produced waters from Permian, Wolfcamp, and Pennsylvanian producing wells in the greater area are also anticipated to be disposed. All these sources would be compatible with the Siluro-Devonian disposal zones.
5. An analysis of Devonian water from this well, shown below, indicates chlorides at 13,900 mg/l. This would approximate to about 28,500 mg/l TDS. This table is from the Go-Tech website.

**Water Samples for Well BIG EDDY UT 001**

**API = 3001505819**

**Formation = DEV**

**Field = null**

**Instructions:**

Click 

For general information about this sample.

Click 

For scale calculation pages (Stiff-Davis or Oddo Tomson methods).

Click 




To select **this water sample** for water mixing. It will lead to the main page, and add the sample ID to the mixing table.

Click **664**

Click the hyperlinked sample number to make a .csv for that sample, **or** select several check boxes and click Submit for multiple samples

The ions are in (mg/L) units.

	SampleID	T	R	S	SO4	CL	CO3	HCO3	K	Na	Ca	Mg
--	----------	---	---	---	-----	----	-----	------	---	----	----	----

☐ 7263    20S 31E 03 730 13960 null 469 null null null null

☐ SELECT/DESELECT ALL

Submit



Mesquite SWD, Inc. Big Eddy SWD No.1  
660 FSL & 660 FEL  
Sec. 3, T20S-R31E, Eddy Co., NM

**Item VIII:**

The e-log top of the Devonian (Siluro-Devonian) is 13930' and was observed in samples at 13940'. Sample descriptions are of dolomite, limey, gray tan, crystalline. The sample log shows approximate 70-80% limestone with notations of cavernous porosity. At TD the bottom 25 ft of samples are 100% medium to coarse crystalline dolomite.

There are no potable water sources known in the AOR. USGS topographic maps and SPOT satellite imagery of the greater AOR show no indications of windmills or spring/surface water-fed vegetation. There are no stock wells or oil/gas shallow rig water tests reported in the New Mexico Office of the State Engineer (OSE) in the T19S-R31E portion of the 2-mile area of interest. One shallow rig supply well was drilled in SE/4 SE/4 NW/4 of Sec. 10, T20S-R31E to TD 280' and water depth 130'. One shallow cable tool well located 1980' FSL & FEL of Sec. 4, T20S-R31E reported water from 150-175 ft. No comment was made as to water quality in those two wells. Several exploration permits have been issued over the years by the OSE, but none were completed or reported water found.

**Item IX:**

Stimulation, if used, will consist of spotting 7,500 gals of 15% HCl over each of two zones in the Devonian at 13950 and 14100 ft. Appropriate non-emulsifying and corrosion additives will be used.

**Item X:**

All drilling, casing, perforating, testing, and plugging reports and well logs by Pan American, the original operator, are in the OCD files.

**Item XI:**

As describe in Item VIII, above, there are no known potable water sources in the 2-mile radius of the proposed SWD well.

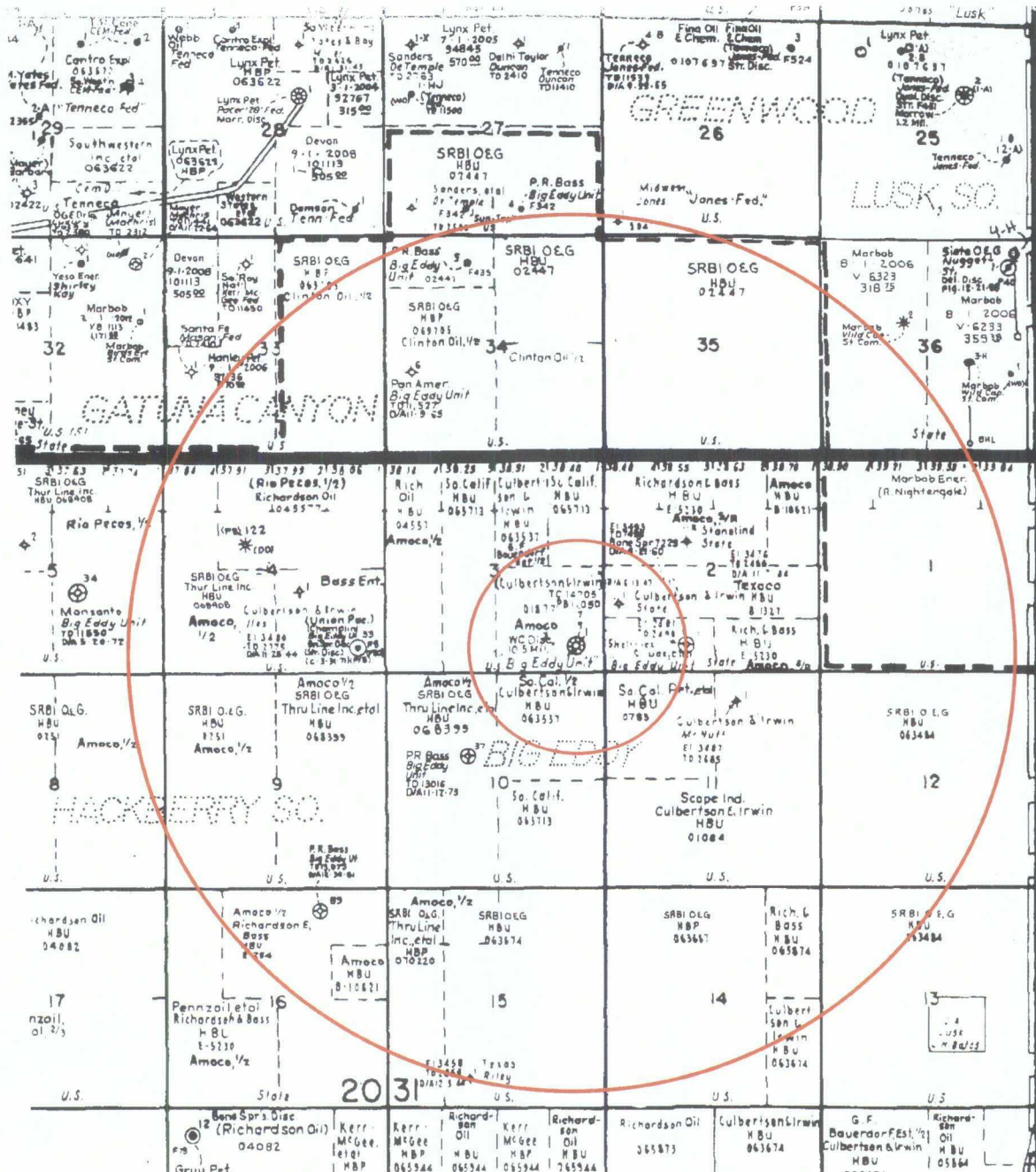
**Item XII:**

There is no geological evidence of open faults nor hydrologic connection between the disposal zone and any possible underground sources of potable water.

Mesquite SWD, Inc.  
Big Eddy SWD No.1  
660 FSL & 660 FEL  
Sec. 3, T20S-R31E, Eddy Co., NM

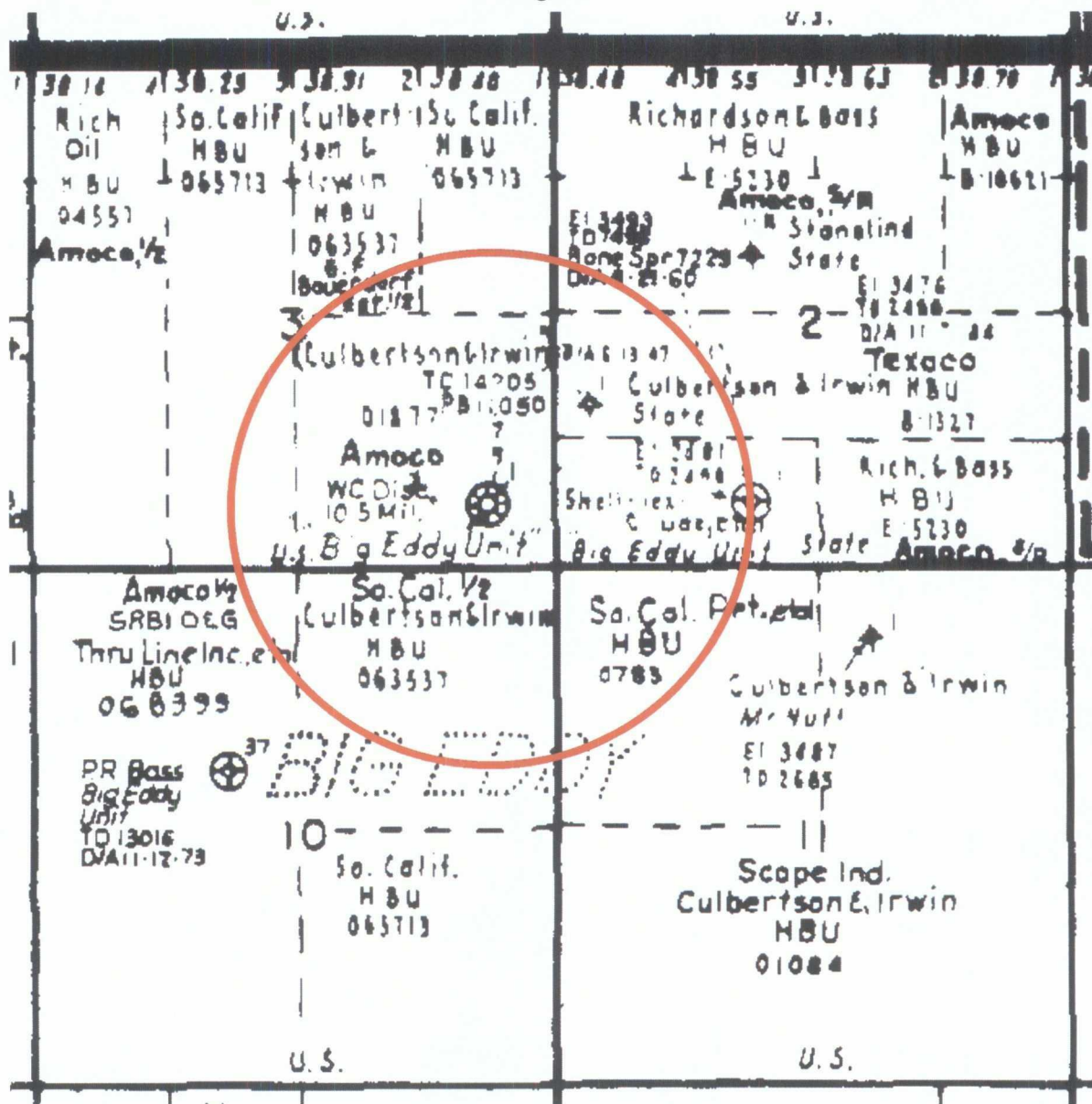
Area of Review  
1/2 Mile AOR and 2 Mile Radii

## Area of Review Big Eddy SWD



Mesquite SWD, Inc.  
 Big Eddy SWD No.1  
 660 FSL & 660 FEL  
 Sec. 3, T20S-R31E, Eddy Co., NM

Enlarged AOR



*all in Big Eddy UNIT*

Mesquite SWD, Inc.  
Big Eddy SWD No.1  
660 FSL & 660 FEL  
Sec. 3, T20S-R31E, Eddy Co., NM

# Item VI:

There are no wells within either the 1/2 mile Area of Review (AOR), the 1-mile radius, or within a 2-mile radius that penetrate all the Mississippian Barnett Shale, any Mississippian Lime, or the proposed Siluro-Devonian injection interval. Tabulations of all known wells in AOR and within the 2-mile radius are shown below.

All Known Wells in AOR

API	WELL NAME	STATUS	UNIT	SEC	TOWNSHIP	RANGE	NS	EW	OPERATOR	LAND	SPUD DATE	PLUG DATE	ELEV-GL	TVD_DEPTH
3001505816	State L 001	Plugged	L	2	20S	31E	1550-S	330-W	CULBERTSON-IRWIN	S	5/12/1947	6/24/1947	3481	2450
3001505817	001	Plugged	N	2	20S	31E	660-S	1980-W	SHELL OIL & TEXAS	S	7/21/1962	8/21/1960	3493	745E
3001505819	BIG EDDY UT 001	Plugged	P	3	20S	31E	660-S	660-E	PAN AMERICAN	F	11/23/1961	2/13/1964	3494	14205

All Known Wells in 2-Mile Radius outside AOR

API	WELL NAME	COMPL STATUS	CCD_UL	SECTION	TOWNSHIP	RANGE	FTG_NS	FTG_EW	OPERATOR	AND_TNF	SPUD DATE	PLUG DATE	ELEV-GL	TVD_DEPTH
3001524650	MASON FED 001	Plugged	L	33	19.0S	31E	1980-S	660-W	SANTA FE EXP CO	F	10/31/1982	12/20/1985	3459	2410
3001510565	BIG EDDY UT 005	Plugged	C	34	19.0S	31E	660-N	1980-W	PERRY R BASS	F	7/19/1963	8/14/1969	3486	1148E
3001510620	BIG EDDY UT 006	Plugged	L	34	19.0S	31E	1980-S	660-W	PAN PET CORP	F	10/9/1963	11/12/1965	3489	11527
None	State N	Plugged	F	2	20.0S	31E	2285-N	2516-W	Stanolind Oil & Gas	F	9/13/1944	11/1/1944	3154	2485
3001527454	122	Active	F	4	20.0S	31E	1980-N	1980-W	BEPCO, LP	F	6/24/1992		3486	11600
3001505820	1145 001	Plugged	J	4	20.0S	31E	1980-S	1980-E	CULBERTSON-IRWIN	F	10/25/1944	11/20/1944	3480	2775
3001520369	BIG EDDY 033	Active	P	4	20.0S	31E	660-S	660-E	BEPCO, LP	F	2/3/1971		3483	11825
3001520901	037	Plugged	F	10	20.0S	31E	1980-N	1980-W	PERRY R BASS	F	7/28/1972	9/19/1973	3475	13014
3001505825	McNutt 001	Plugged	R	11	20.0S	31E	660-N	1980-E	CULBERTSON-IRWIN		8/31/1945	12/31/1945	3487	2685
3001505826	001	Plugged	N	15	20.0S	31E	660-N	1980-W	TEXACO INC	F	9/2/1944	12/18/1944	3458	2850

-- Note: Stanolind well originally reported as 1980 FNL & FWL. Satellite and top data reflect the above listed footages.

One Active well 3001520369 BEPCO Big Eddy Unit No. 33 is 1-mile west of the proposed re-entry. The No. 33 TD is 11825 with plugged-back TD at 11597. Production is commingled Bone Springs 9897-9920 and Pennsylvania Strawn 11461-11426. These correlative zones are cemented behind 7-5/8" and 5-1/2"liner respectively in the proposed re-entry.

Mesquite SWD, Inc.  
Big Eddy SWD No.1  
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Sec. 3, T20S-R31E, Eddy Co., NM

### PLUG AND ABANDON WELL DIAGRAM

API: None

Operator: Standolind Oil & Gas

Lease: State "N"

Well No: 1

Location: Sec 2, T20S-R31E Eddy Co., NM

Footage: 1980 FNL, 1980 FWL

DF: 3476

Spud date: September 13, 1944

Plugged date: November 1, 1944

MSL of TD: 897

#### Surface Csg

Size: 10-3/4"

Set @: 324

Sxs cmt: Set

Circ:

TOC:

Hole Size: NR

#### Intermediate Csg

Size: 8-5/8"

Set @: 1093

Sxs cmt: 50

Circ:

TOC:

Hole Size: NR

#### Water String

Size: 7"

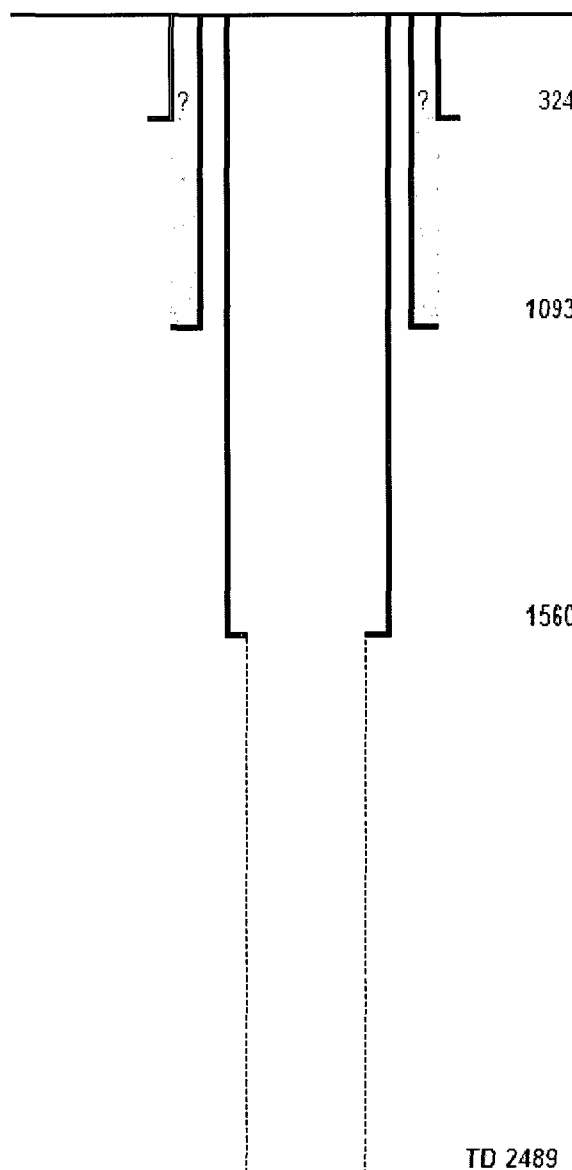
Set @: 1560

Sxs cmt: Set

Circ:

TOC:

Hole Size: NR



324

1093

1560

Plugging unknown

TD 2489

Not to scale

Mesquite SWD, Inc.  
Big Eddy SWD No.1  
660 FSL & 660 FEL  
Sec. 3, T20S-R31E, Eddy Co., NM

### PLUG AND ABANDON WELL DIAGRAM

API: 3001505816

Operator: Culbertson & Irwin

Lease: State "L"

Well No: 1

Location: Sec 3, T20S-R31E Eddy Co., NM

Footage: 1650 FSL, 330 FWL

DF 3481  
Spud date: May 9, 1947  
Plugged date: June 13, 1947  
MSL of TD: 991

#### Surface Csg

Size: 10-3/4"

Set @: 338

Sxs cmt: NR

Circ:

TOC:

Hole Size: NR

#### Intermediate Csg

Size: 8-5/8"

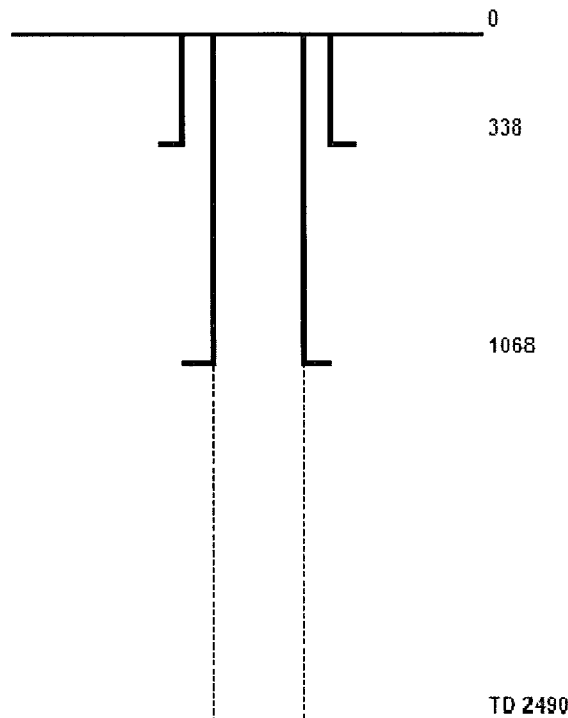
Set @: 1068

Sxs cmt: NR

Circ:

TOC:

Hole Size: NR



USGS reports sulfur wtr @ 2490'

Not to scale

Mesquite SWD, Inc.  
Big Eddy SWD No.1  
660 FSL & 660 FEL  
Sec. 3, T20S-R31E, Eddy Co., NM

### PLUG AND ABANDON WELL DIAGRAM

API: 3001505817

Operator: Texas Crude

Lease: State "L"

Well No: 2-Jan

Location: Sec 2, T20S-R31E Eddy Co., NM

Footage: 660 FSL, 1980 FWL

DF 3493

Spud date: July 24, 1960

Plugged date: August 21, 1960

MSL of TD: -4003

#### Surface Csg

Size: 13-3/8"

Set @: 850

Sxs cmt: 700

Circ: Yes

TOC:

Hole Size: 15-1/2"

#### Intermediate Csg

Size: 9-5/8"

Set @: 2220

Sxs cmt: 600

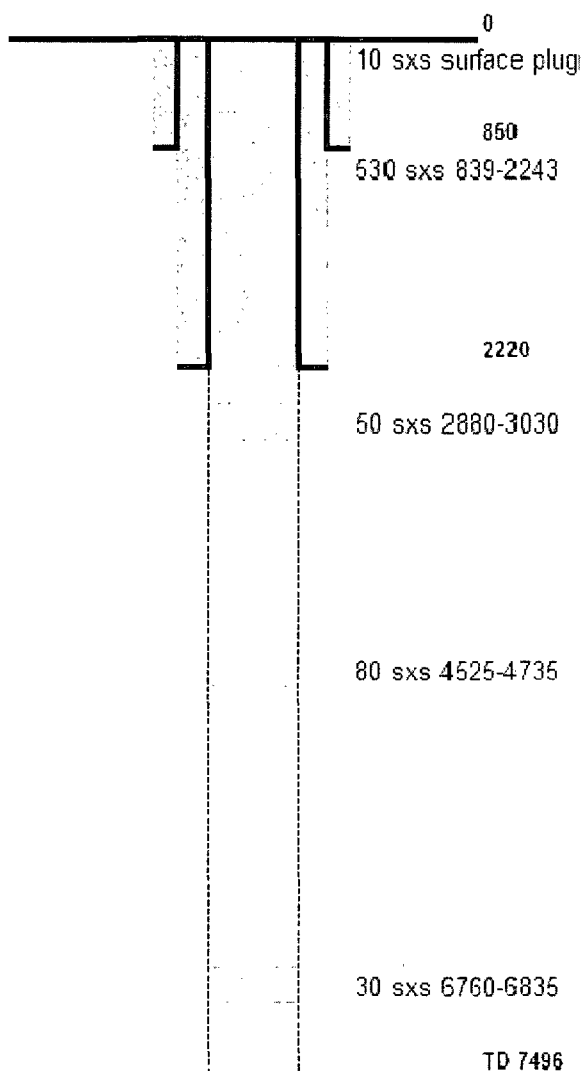
Circ: Yes

TOC:

Hole Size: 12-1/4"

#### Open Hole

Size: NR



Not to scale

Mesquite SWD, Inc.  
Big Eddy SWD No.1  
660 FSL & 660 FEL  
Sec. 3, T20S-R31E, Eddy Co., NM

### PLUG AND ABANDON WELL DIAGRAM

API: 3001520901

Operator: Perry R. Bass

Lease: Big Eddy Unit

Location: Sec 10, T20S-R31E Eddy Co., NM

Footage: 1980 FNL, 1980 FWL

Well No: 37

GL: 3475

Spud date: July 26, 1973

Plugged date: September 14, 1973

MSL of TD: -10691

#### Surface Csg

Size: 13-3/8"

Set @: 825

Sxs cmt: 625

Circ: Yes w/1"

TOC:

Hole Size: 17-1/2"

#### Intermediate Csg

Size: 8-5/8"

Set @: 4175

Sxs cmt: 2040

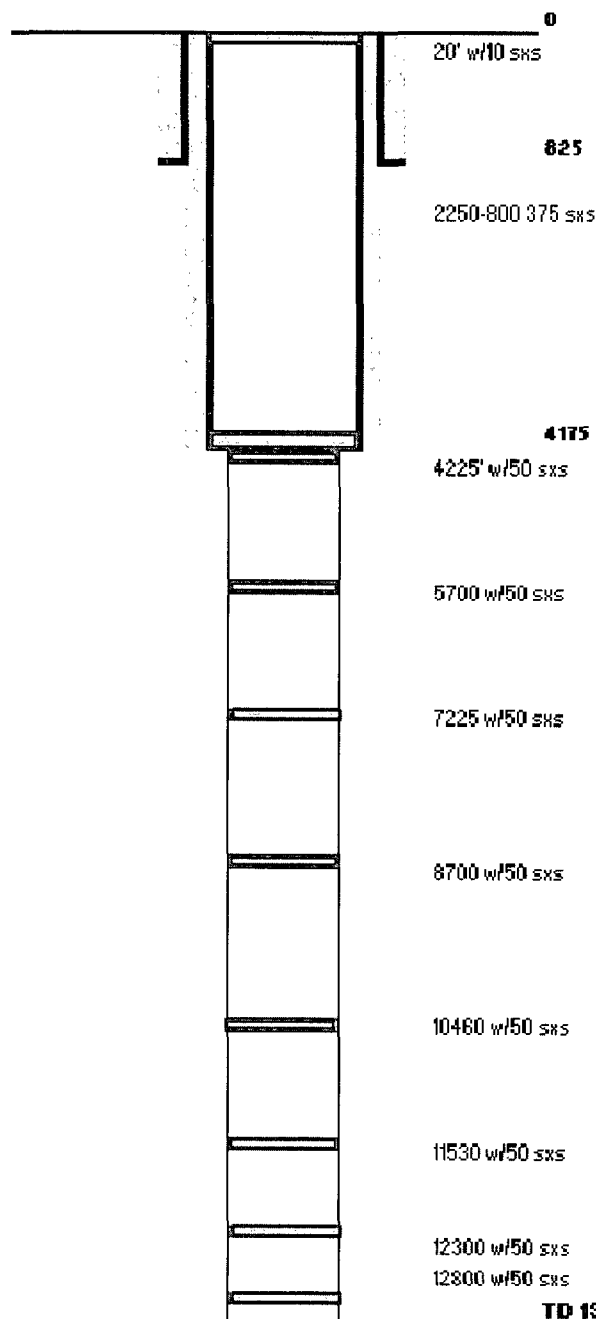
Circ: Yes

TOC:

Hole Size: 12-1/4"

Hole size to TD: 7-7/8"

Not to scale



TD 13016 is top Barnett Shale

Mesquite SWD, Inc  
Big Eddy SWD No.1  
660 FSL & 660 FEL  
Sec. 3, T20S-R31E, Eddy Co., NM

**Item XIII:**

**Notification list**

**Surface Owner (as per Eddy County Assessor's Office):**

Bureau of Land Management  
c/o Carlsbad Field Office  
620 E. Greene Street  
Carlsbad, NM 88220

**Operators:**

BEPCO, L.P.  
Annette M. Childers  
6 Desta Drive, Ste 3700  
P. O. BOX 2760  
Midland, TX 79702

A copy of the disposal application was furnished to the above by CERTIFIED MAIL. Evidence of same is enclosed.

Signed: Kay Havenor  
Kay Havenor, PhD, PG

Date: 6/23/2009

Mesquite SWD, Inc  
Big Eddy SWD No.1  
660 FSL & 660 FEL  
Sec. 3, T20S-R31E, Eddy Co., NM

## Affidavit of Publication

NO. 20733

STATE OF NEW MEXICO

County of Eddy:

GARY D. SCOTT being duly

sworn, says: That he is the PUBLISHER of The

Artesia Daily Press, a daily newspaper of general  
circulation, published in English at Artesia, said county  
and county and state, and that the here to attached

### Legal Notice

was published in a regular and entire issue of the said  
Artesia Daily Press, 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  
1 Consecutive week/days on the same

day as follows:

First Publication June 21, 2009

Second Publication \_\_\_\_\_

Third Publication \_\_\_\_\_

Fourth Publication \_\_\_\_\_

Fifth Publication \_\_\_\_\_

Subscribed and sworn to before me this

21 Day June 2009



OFFICIAL SEAL  
Jo Morgan  
NOTARY PUBLIC-STATE OF NEW MEXICO

My commission expires: 6/26/2012

Jo Morgan  
Notary Public, Eddy County, New Mexico

## Copy of Publication:

**Legal Notice**  
Mesquite SWD, Inc.,  
P.O. Box 1479,  
Carlsbad, NM 87221,  
(575) 622-0283 is seek-  
ing approval from the  
New Mexico Oil  
Conservation Division to  
re-enter and complete  
for commercial pro-  
duced water and Class I  
non-hazardous non-  
toxic water disposal into  
the Pan American Big  
Eddy Unit No. 1 well  
located 660 from the  
south line and 660 feet  
from the east line of  
Section 3, T20S, R30E,  
Eddy County, N.M.

The proposed disposal  
interval is the Siluro-  
Devonian through open  
hole below 5-1/2" liner at  
12,970 ft to TD at 14,205  
ft.

Mesquite SWD, Inc.  
plans to dispose of a  
maximum of 27,500  
BWPD with a maximum  
pressure of 2,500 psig.  
Parties with questions  
regarding this proposal  
can contact Mesquite  
SWD, Inc. at the above

address, or Kay  
Havenor, Geologist, by  
telephone at 575-622-  
0283.

Interested parties must  
file objections or  
requests for hearing  
within 15 days to the Oil  
Conservation Division:  
1220 S. St. Francis Dr.,  
Santa Fe, NM 87505.

Published in the Artesia  
Daily Press, Artesia, NM  
June 21, 2009.

Legal No. 20733

**Havenor Operating Company**  
904 North Moore Avenue  
Roswell, New Mexico 88201-1144

(575) 622-0283

RECEIVED

2009 JUL 14 AM 11 22

July 11, 2009

New Mexico Oil Conservation Division  
Attn: Mr. William Jones  
1220 South St. Francis Drive  
Santa Fe, NM 87505

Dear Mr. Jones:

As per our emails regarding the attachment with copies of the receipts of certified mail service for the Big Eddy SWD #1 C-108 notifications, the hard copies are enclosed.

Thank you for letting me know about the failure to deliver.

Sincerely yours,



Kay Havenor

Enclosure: photo copy of receipts

**Jones, William V., EMNRD**

---

**From:** Kay Havenor [khavenor@georesources.com]  
**Sent:** Monday, July 27, 2009 9:54 AM  
**To:** Jones, William V., EMNRD  
**Subject:** Mesquite Big Eddy SWD #1  
**Attachments:** Response to Jones liner.pdf

Will,

There was nothing wrong with email, it was received. Your questions led to my needing to clean-up a few things on several pages and clarify them. A letter of explanation and the described pages/changes accompany the letter. This is in PDF format. A hard copy aslo goes in the mail today, as does a copy of application to Intrepid Potash, and changes to BEPCO and BLM.

I apologize for the delay in response, and for the (my) confusion on diagrams.

Please contact me if there are more questions.

Kay

Kay C. Havenor, Ph.D., PG. CPG  
GeoScience Technologies  
200 West First Street, Suite 747  
Roswell, NM 88203-4678  
(575) 622-0283

---

This inbound email has been scanned by the MessageLabs Email Security System.

---

**Jones, William V., EMNRD**

---

**From:** Kay Havenor [khavenor@georesources.com]  
**Sent:** Monday, July 27, 2009 1:33 PM  
**To:** Jones, William V., EMNRD  
**Subject:** Intrepid Certified sent receipt  
**Attachments:** Certified mail Intrepid receipt 7-27-2009.PDF

Will,

I forgot to include the certified receipt that a complete copy of the C-108 Mesquite SWD, Inc., Big Eddy SWD #1 was sent to Intrepid today.

As I was preparing this email, Larry Shore NMED called to request a copy of the application. I sent it (with the changed diagrams) as PDF a few minutes ago.

Kay

Kay C. Havenor, Ph.D., PG. CPG  
GeoScience Technologies  
200 West First Street, Suite 747  
Roswell, NM 88203-4678  
(575) 622-0283

---

This inbound email has been scanned by the MessageLabs Email Security System.

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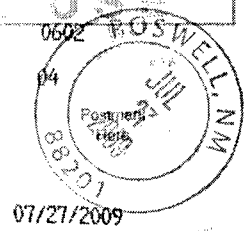
7008 2810 0001 9039 5775

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Total Postage & Fees	\$	\$6.49



Sent To Intrepid Potash NM, LLC  
Street, Apt. No., or PO Box No. 707 - 17th St Suite 4200  
City, State, ZIP+4 Denver, CO 80202  
PS Form 3800, August 2005 See Reverse for Instructions

7008 0500 0001 0693 1327

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(Domestic Mail Only; No Insurance Coverage Provided)		
For delivery information visit our website at <a href="http://www.usps.com">www.usps.com</a>		
MIDLAND-TX 79702		
Postage	\$ 1.56	0602 05 JUN 24 2009 ROSWELL, NM Post Office Here 06/24/2009
Certified Fee	\$2.80	
Return Receipt Fee (Endorsement Required)	\$2.30	
Restricted Delivery Fee (Endorsement Required)	\$0.00	
Total Postage & Fees	\$ 6.66	
Sent To: BEPCO, L.P. Annette Childers		
Street, Apt. No., or PO Box No. P.O. Box 2760		
City, State, ZIP+4 Midland, TX 79702		
PS Form 3800, August 2006 See Reverse for Instructions		

7008 0500 0001 0690 1259

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(Domestic Mail Only; No Insurance Coverage Provided)		
For delivery information visit our website at <a href="http://www.usps.com">www.usps.com</a>		
CARLSBAD NM 88220		
Postage	\$ 1.56	0602 05 JUN 24 2009 ROSWELL, NM Post Office Here 06/24/2009 88201
Certified Fee	\$2.80	
Return Receipt Fee (Endorsement Required)	\$2.30	
Restricted Delivery Fee (Endorsement Required)	\$0.00	
Total Postage & Fees	\$ 6.66	
Sent To: Bureau of Land Management		
Street, Apt. No., or PO Box No. 620 E. Greene St		
City, State, ZIP+4 Carlsbad, NM 88220		
PS Form 3800, August 2006 See Reverse for Instructions		

SENDER: COMPLETE THIS SECTION		COMPLETE THIS SECTION ON DELIVERY	
<ul style="list-style-type: none"> <li>Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.</li> <li>Print your name and address on the reverse so that we can return the card to you.</li> <li>Attach this card to the back of the mailpiece, or on the front if space permits.</li> </ul>		A. Signature X <i>A. Osurez</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee	
1. Article Addressed to: Bureau of Land Management c/o Carlsbad Field Office 620 E. Greene St Carlsbad, NM 88220		B. Received by (Printed Name) A Osurez	
		C. Date of Delivery  	
		D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No	
		3. Service Type <input checked="" type="checkbox"/> Certified Mail <input type="checkbox"/> Express Mail <input type="checkbox"/> Registered <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Insured Mail <input type="checkbox"/> C.O.D.	
		4. Restricted Delivery? (Extra Fee) <input type="checkbox"/> Yes	
2. Article Number (Transfer from service label)		7008 0500 0001 0693 1259	
PS Form 3811, February 2004		Domestic Return Receipt	
		102595-02-M-1540	

SENDER: COMPLETE THIS SECTION		COMPLETE THIS SECTION ON DELIVERY	
<ul style="list-style-type: none"> <li>Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.</li> <li>Print your name and address on the reverse so that we can return the card to you.</li> <li>Attach this card to the back of the mailpiece, or on the front if space permits.</li> </ul>		A. Signature X <i>T. Love</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee	
1. Article Addressed to: BEPC, L.P. Annette Childers 6 Deste Drive Ste. 3700 P.O. Box 2760 Midland, TX 79702		B. Received by (Printed Name) T. Love	
		C. Date of Delivery 6-25-09	
		D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No	
		3. Service Type <input checked="" type="checkbox"/> Certified Mail <input type="checkbox"/> Express Mail <input type="checkbox"/> Registered <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Insured Mail <input type="checkbox"/> C.O.D.	
		4. Restricted Delivery? (Extra Fee) <input type="checkbox"/> Yes	
2. Article Number (Transfer from service label)		7008 0500 0001 0693 1327	
PS Form 3811, February 2004		Domestic Return Receipt	
		102595-02-M-1540	

## Inactive Well Additional Financial Assurance Report

161968 MESQUITE SWD, INC

Total Well Count: 14

Printed On: Wednesday, July 08 2009

Property	Well Name	Lease Type	ULSTR	OCD Unit Letter	API	Well Type	Last Prod/Inj	Inactive Additional Bond Due	Measured Depth	Required Bond Amount	Bond Required Now	Bond In Place	In Violation
306528	ANN SWD #001	P	G-18-19S-26E	G	30-015-23580	S	01/2009	02/01/2011	9540	14540		0	
300272	BIG EDDY FEDERAL #100	F	L-8 -21S-28E	L	30-015-24824	S	04/2009		9200			0	
303114	CARTHEL FEDERAL COM #002	F	G-5 -23S-29E	G	30-015-23389	G	10/2005		Unknown			0	
24734	DORSTATE SWD #001	S	H-27-25S-28E	H	30-015-23728	S	04/2009	05/01/2011	8000	13000		0	
33262	DUNAWAY #001	P	F-23-22S-27E	F	30-015-28083	W			Unknown			0	
	DUNAWAY #002	P	F-23-22S-27E	F	30-015-28084	I			Unknown			0	
302443	EXXON STATE #001	S	J-15-21S-27E	J	30-015-01091	O	04/2009	05/01/2011	561	5561		0	
	EXXON STATE #002	S	J-15-21S-27E	J	30-015-01092	O	04/2009	05/01/2011	576	5576		0	
	EXXON STATE #003	S	O-15-21S-27E	O	30-015-01096	O	04/2009	05/01/2011	589	5589		0	
	EXXON STATE #007	S	O-15-21S-27E	O	30-015-01100	O	04/2009	05/01/2011	580	5580		0	
	EXXON STATE #008	S	O-15-21S-27E	O	30-015-22055	S	04/2009	05/01/2011	694	5694		0	
301620	KAISER STATE #044	S	F-13-21S-34E	F	30-025-32741	O	03/2006	04/01/2008	4190	9190	Y	9190	
303012	ROHMER #001	P	F-23-22S-27E		30-015-25722	S	04/2009	05/01/2011	12300	17300		0	
301022	WILLOW LAKE #001	F	C-22-24S-28E	C	30-015-21499	S	04/2009		Unknown			0	

WHERE Ogrid:161968

NEW MEXICO OIL CONSERVATION COMMISSION  
SANTA FE, NEW MEXICO

APPLICATION FOR APPROVAL OF BIG EDDY UNIT AGREEMENT  
EDDY AND LEA COUNTIES, NEW MEXICO

New Mexico Oil Conservation Commission,  
Santa Fe, New Mexico.

Comes the undersigned, RICHARDSON & BASS, a co-partnership of Fort Worth, Texas, and files herewith three copies of a proposed Unit Agreement for the development and operation of the Big Eddy Unit Area, Eddy and Lea Counties, New Mexico, and hereby makes application for the approval of said Unit Agreement by the New Mexico Oil Conservation Commission as provided by law, and in support thereof shows:

1. That the proposed unit area covered by said agreement comprises 133,444.29 acres, more or less, more particularly described as follows:

NEW MEXICO PRINCIPAL MERIDIAN, NEW MEXICO

T. 19 S., R. 31 E.

Sec. 27: S $\frac{1}{2}$   
Sec. 33: E $\frac{1}{2}$   
Sec. 34: All  
Sec. 35: All

T. 20 S., R. 30 E.

Secs. 25-27 (incl.): All  
Secs. 34-36 (incl.): All

T. 20 S., R. 31 E.

Secs. 2-36 (incl.): All

T. 20 S., R. 32 E.

Sec. 7: All  
Sec. 8: W $\frac{1}{2}$ W $\frac{1}{2}$   
Secs. 17-21 (incl.): All  
Sec. 27: S $\frac{1}{2}$ S $\frac{1}{2}$   
Secs. 28-34 (incl.): All

T. 21 S., R. 28 E.

Secs. 3-36 (incl.): All

T. 21 S., R. 29 E.

Secs. 1-3 (incl.): All  
Secs. 7-36 (incl.): All

T. 21 S., R. 30 E.

Secs. 1-12 (incl.): All  
Secs. 14-22 (incl.): All  
Sec. 23: All  
Sec. 27: N $\frac{1}{2}$   
Secs. 28-30 (incl.): All

T. 21 S., R. 31 E.

Sec. 3: Lots 1 to 16, Incl.  
Secs. 4-6 (incl.): All  
Secs. 7-9 (incl.): All

T. 22 S., R. 28 E.

Secs. 1-5 (incl.): All  
Sec. 6: Lots 1,2,3,4,5, SE $\frac{1}{4}$ NW $\frac{1}{4}$ , S $\frac{1}{2}$ NE $\frac{1}{4}$ , SE $\frac{1}{4}$   
Sec. 8: E $\frac{1}{2}$ , E $\frac{1}{2}$ W $\frac{1}{2}$   
Secs. 9-14 (incl.): All  
Sec. 15: NE $\frac{1}{4}$ , E $\frac{1}{2}$ SE $\frac{1}{4}$   
Sec. 17: N $\frac{1}{2}$ N $\frac{1}{2}$   
Sec. 22: E $\frac{1}{2}$ NE $\frac{1}{4}$   
Secs. 23-25 (incl.): All

T. 22 S., R. 29 E.

Secs. 2-10 (incl.): All  
Secs. 15-22 (incl.): All  
Secs. 27-30 (incl.): All  
Sec. 31: E $\frac{1}{2}$   
Secs. 32-34 (incl.): All  
Sec. 35: W $\frac{1}{2}$ , W $\frac{1}{2}$ SE $\frac{1}{4}$

T. 23 S., R. 29 E.

Sec. 2: All  
Sec. 3: Lots 1,2,3,4, S $\frac{1}{2}$ N $\frac{1}{2}$ , N $\frac{1}{2}$ S $\frac{1}{2}$ , S $\frac{1}{2}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$ SW $\frac{1}{4}$   
Sec. 4: Lots 1,2,3,4, S $\frac{1}{2}$ N $\frac{1}{2}$ , N $\frac{1}{2}$ SE $\frac{1}{4}$

That of the above described lands 115,255.80 acres are Federal lands or part of the Public Domain, and 16,639.40 acres are lands of the State of New Mexico, and 1,549.09 acres are fee or privately owned lands.

2. That said area has heretofore been designated by the Director of the United States Geological Survey as an area suitable and proper for unitization, a copy of the letter so designating said area being attached hereto, made a part hereof, and for purposes of identification marked Exhibit "A".

That there is also attached hereto, made a part hereof, and for purposes of identification marked Exhibit "B", a copy of Application filed with the United States Geological Survey pursuant to which said lands were designated as an area suitable and proper for unitization together with a plat showing the result of a

FROM	TO	TOTAL FEET	FORMATION
10,811	11,174	360	Lime, shale
11,174	11,199	25	Shale
11,199	11,333	134	Lime, shale
11,333	11,382	39	Lime
11,382	11,410	28	Lime, shale
11,410	11,438	49	Lime
11,438	11,564	105	Lime, chert
11,564	11,608	44	Lime
11,608	11,766	158	Lime, chert
11,766	11,775	9	Lime
11,775	11,826	60	Lime, shale
11,826	11,942	116	Lime
11,942	11,995	53	Lime, shale
11,995	12,081	86	Lime
12,081	12,304	223	Lime, shale
12,304	12,356	52	Lime, shale, sand
12,356	12,365	9	Lime, sand
12,365	12,390	25	Lime, sand, shale
12,390	12,418	28	Lime, shale
12,418	12,432	14	Lime, shale, sand
12,432	12,449	17	Lime, shale, chert
12,449	12,468	19	Lime, chert
12,468	12,479	11	Lime, shale, sand
12,479	12,483	4	Lime, sand
12,483	12,525	42	Lime, sand, shale
12,525	12,549	24	Lime, sand, chert
12,549	12,571	22	Lime, sand, Chert
12,571	12,587	16	Lime, sand
12,587	12,592	5	Sand Shale
12,592	12,721	129	Lime, shale, sand
12,721	12,795	74	Lime, shale
12,795	12,841	46	Lime, shale, sand
12,841	12,852	11	Sand, shale
12,852	12,894	42	Sand, shale, lime
12,894	12,930	36	Shale, sand
12,930	13,309	379	Lime, shale
13,309	13,694	385	Lime, chert, shale
13,694	13,726	32	Lime, chert
13,726	13,781	55	Lime, chert, shale
13,781	13,799	18	Lime, shale
13,799	13,897	98	Shale
13,897	13,950	53	Lime, shale
13,950	14,205	255	Lime

Top's from logs  
 Strawn 11418  
 Atoka 11845  
 Miss. 13259  
 Devonian 13930

# HISTORY OF OIL OR GAS WELL

It is of the greatest importance to have a complete history of the well. Please state in detail the dates of refilling, together with the reasons for the work and its results. If there were any changes made in the casing, state fully, and if any casing was "sidetracked" or left in the well, give its size and location. If the well has been dynamited, give date, size, position, and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position, and results of pumping or bailing.

TD 14,205'. Ran logs. Selective testing and review of logs confirmed no commercial pays below PBD 12,970'. In accordance telephone authority of 3/26/62 by Mr. Shook to J. W. Meek, the hole was plugged back as follows: 30 Sx cement plug set from 14,000'-13,900'; 45 Sx cement plug set from 13,970'-12,970'. All intervals filled with heavy mud laden fluid. On 3/28/62 1723' of 5 1/2" OD 20# N-80 Casing liner was run and set from 11,247' to 12,970' and cemented with 235 Sx cement, PBD 12,900'. Top cement behind 5 1/2" at 11,310'. After 400 IS hours, perforated 12,592'-12,608' w/45PF, and spotted 1000 gal MCA. Water fraced with 20,000 gal water and 2000# rounded walnut hulls. Recovered no oil or gas. Set CI retainer at 12,555' and squeezed perforations 12,592'-608' w/50 Sx cement. Plug set in Devonian and subsequent running of liner approved by telephone 3/26/62, per Mr. Shook, USGS, to J. W. Meek. Perforated 12,460'-92' w/45PF. Recovered no oil or gas. Set CI retainer at 12,400' and squeezed perforations 12,460'-92' w/50 Sx Cement. Perforated Strawn 11,486'-504' w/25PF and acidized with 2000 gal acid. Perforations communicated behind liner to 7 5/8 casing. Squeezed with 95 Sx cement. Drilled out to 11,504' and perforated 11,486'-11504' w/25PF and acidized with 2000 gallons. Did not recover load water. Perforated 11,527'-532' w/45PF and acidized with 1000 gal LSTNE. Recovered 249 BO and 541 BW in 7 days. Squeezed perforations 11486'-11532' with 100 Sx cement to shut off water. Perforated 11527'-11532' and acidized with 500 gal LSTNE. Recovered load water, 162 BO x 1259 BW in 7 days.

Set CI Bridge Plug at 11050' and squeezed perforations 11527'-11532' with 75 Sx cement. Perforated Wolfcamp 10690'-710' with 45PF. Acidized with 2000 gal LSENE acid, snubbed in and evaluated. Set Baker Model "D" Production packer with knockout plug at 10,600'. Perforated 8409'-10' w/45PF and cemented behind 7 5/8" casing with 600 Sx cement. Cement circulated. Drilled out cement, tested casing and perforations with 2000 psi for 30 minutes with no loss of pressure, ran tubing, and started evaluation tests.

RECEIVED  
 MAR 8 1962  
 U.S. GEOLOGICAL SURVEY

RECEIVED  
 MAR 8 1962  
 U.S. GEOLOGICAL SURVEY

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

SUBMIT IN  
(Other just  
verse side)

APPLICATE  
one on re-

Form approved.  
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.

**MA 01877**

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

**SUNDRY NOTICES AND REPORTS ON WELLS**

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.  
Use "APPLICATION FOR PERMIT—" for such proposals.)

1. ☐ OIL WELL ☐ GAS WELL ☒ OTHER

2. NAME OF OPERATOR

**Pan American Petroleum Corporation**

3. ADDRESS OF OPERATOR

**Box 68 - Hobbs, New Mexico - 88240**

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.\*  
See also space 17 below.)  
At surface

**660' FSL X 660' FEL Sec. 3, (SE/4 SE/4) Unit P**

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.)

**3514' RDB**

7. UNIT AGREEMENT NAME

**Big Eddy Unit**

8. FARM OR LEASE NAME

9. WELL NO.

**1**

10. FIELD AND POOL, OR WILDCAT

**Big Eddy-Wolfcamp Gas**

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA

**3-20-31 NW/4**

12. COUNTY OR PARISH

**Eddy**

13. STATE

**New Mexico**

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF ☐

FRACTURE TREAT ☐

SHOOT OR ACIDIZE ☐

REPAIR WELL ☐

(Other) ☐

PULL OR ALTER CASING ☐

MULTIPLE COMPLETE ☐

ABANDON\* ☐

CHANGE PLANS ☐

SUBSEQUENT REPORT OF:

WATER SHUT-OFF ☐

FRACTURE TREATMENT ☐

SHOOTING OR ACIDIZING ☐

(Other) ☐

REPAIRING WELL ☐

ALTERING CASING ☐

ABANDONMENT\* ☒

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)\*

**In accordance with Form 9-331 filed 2-20-64, this well was PIA as follows:**

**Squeezed interval 10,690-710' with 100 sx.**

**Spotted 35 sx plug on top of packer at 10,600'**

**Loaded hole with mud laden fluid**

**Spotted 375 sx plug from 2250-300'**

**Spotted 5 sx plug at surface and erected PIA marker**

**Work done 3-12 & 3-13-64**

**All casing was left in hole**

**Location cleared and ground restored to its natural contour.**

**Plugging operations witnessed by John Westfall of National Potash Co.**

**RECEIVED**

**OCT 21 1964**

**O. C. C.  
ARTESIA, OFFICE**

18. I hereby certify that the foregoing is true and correct

SIGNED

TITLE

**Area Superintendent**

DATE

**6/9/64**

(This space for Federal or State office use)

**APPROVED**

TITLE

DATE

CONDITIONS OF APPROVAL, IF ANY:

**OCT 21 1964**  
**RONNIE E. SHOOK**  
**ACTING DISTRICT ENGINEER**

\*See Instructions on Reverse Side

Kay - Sandy BY MAIL  
(EMAIL probably DID NOT WORK)  
Will

Jones, William V., EMNRD

**From:** Jones, William V., EMNRD  
**Sent:** Wednesday, July 08, 2009 5:49 PM  
**To:** 'Kay Havenor'  
**Cc:** Ezeanyim, Richard, EMNRD; Reeves, Jacqueta, EMNRD; Hall, John, NMENV; Bonham, Sherry, EMNRD; Sanchez, Daniel J., EMNRD; 'Wesley\_Ingram@blm.gov'  
**Subject:** Disposal application on behalf of Mesquite SWD Inc.: Big Eddy SWD #1 30-015-05819 SiluroDevonian disposal

Hello Dr. Havenor:

After reviewing this application you have submitted for Class II oil field waste water disposal:

- a. You referenced the State Engineer records for water wells. Was there a field search for fresh water wells (windmills, etc) within 1 mile of this well? If you can find one, please obtain a water sample and send a water ~~analysis~~ <sup>none</sup> of this for our records.
- b. Please send a new sketch of the "Proposed Completion Plan" well diagram clearly showing the new 3-1/2 inch liner cemented in place and the planned 3-1/2 inch tubing set just above this new liner in a packer in the bottom of the 5-1/2 inch existing liner.
- c. When permitting injection wells in the R-I-I-P potash area, it has been our practice to require formal "notice" of the intended injection to be sent to the nearest Potash Lessee. Please ask the BLM who the nearest Potash Lessee is in this area and send them a copy of this application – and forward the certified receipt to this office.
- d. Please look at the nearest electric logs and send the geology tops for all formations from the top and bottom of the Salt/Potash to the Wolfcamp. It appears this well was a Wolfcamp gas producer at one time.
- e. It is un-usual for the OCD to allow injection into the top of cemented liners – we prefer to have an annulus that can be pressure tested that extends to within 100 feet of the top of the injection interval. In this case, for several reasons, I can see the prudence to run and cement the 3-1/2 inch liner and equip the well as proposed. I cannot speak for others on this.

If you first test the existing perforations in this well – most of which are in the 5-1/2 inch liner – which is itself not circulated with cement, you may see the need to extend the 3-1/2 inch liner to at least the top of the 5-1/2 inch liner and thoroughly test it before injection. Especially if this happens, injection surveys may be required periodically to ensure waters are only entering the permitted interval.

Thank You,

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

Sent BY  
Mail  
7/15/09

*[Handwritten signature]*  
7/15/09



Kay C. Havenor, Ph.D

RECEIVED

2009 JUL 29 AM 9 22

Office: 575-622-0283  
e-mail: KHavenor@GeoResources.com  
200 West First Street, Suite 747  
Roswell, New Mexico 88201

July 27, 2009

New Mexico Oil Conservation Division  
Attn: Mr. William Jones  
1220 South St. Francis Drive  
Santa Fe, NM 87505

Re: Mesquite SWD, Inc., C-108  
Big Eddy SWD #1 30-015-05819

Dear Mr. Jones:

Thank you for your review of the Big Eddy SWD #1 Class II disposal in your email of July 8th. The following discussion and attachments are also being sent USPS. My delay in response has not been due to email problems, but to the time required to verify additional and more correct cementing data, plus field examination, and modify the necessary submittals.

A. We have conducted a field examination for fresh water wells extending well beyond the one-mile radius of the proposed injection well. None have been found. It appears that water is supplied for cattle from taps into the Intrepid fresh water supply line coming from their Caprock pipeline to the mine west of Half Way.

B. This is more complicated because 1) the proposed completion plan submitted is not the plan that is consistent with the published notice, 2) not Mesquite's actual intentions (not the graphs that should have been submitted).

The published legal notice indicated, "The proposed disposal interval is the Siluro-Devonian through open hole below 5-1/2" liner at 12,970 ft to TD at 14,205 ft." This is now correctly illustrated on a diagram titled, "Proposed Re-entry Plan, attached to this letter.

Pan American's filing with the USGS/BLM and OCD were very unclear as to the cementing of their 7-5/8" intermediate casing and 5-1/2" liner. They reported 835 sxs were used for *both* strings. Scout reports were equally unclear. An email and phone conversation with Mr. Jenkins, BEPCO petroleum engineer in Midland, confirmed he only had the same data as was reported to the OCD. Calculations using the reported cement volumes suggest the TOC would be around 3,200 ft, but I would not be surprised to see it into the 9-5/8" casing.

Also attached hereto is a diagram of the injection plan showing the packer set near the base of the 5-1/2" casing at approximately 12,950'. This is the Proposed Completion Plan that *should* have accompanied the application and did not.

The confusion on cementing stemmed from Hondo Oil scout information suggesting they may have been a partner in the original well. Hondo had the most detailed information found on the drilling and testing. Unfortunately, I used the cement volumes Hondo reported (page 4 of original C-108 sheets), which was enough cement (2,352 sxs) on the 5-1/2" to circulate to the surface, fill the pits, and potentially provide concrete parking over the entire location. Reference to that data makes pages 3 and 4 of the original C-108 incorrect and confusing. Corrected copies of those pages on casing/cement are attached hereto. Please note the new Injection Interval, page 4, is properly corrected and now conforms to the published Legal Notice.

C. We have been working with the potash mine closest to this well (Intrepid Potash). A copy of the (corrected) application will be sent Certified Mail. Additionally, BEPCO and the BLM will be advised and copied with the changes to pages 3 and 4 of the C-108, copies of the attached diagrams, and formation tops requested below in paragraph D. Again, the published Legal Notice is unaffected; it was, and is, correct.

D. Tops in Pan American #1 Big Eddy Unit (30-15-05819). Sample and/or Laterolog

Permian 390' (spl)

Rustler Fm 750' (spl) in Champlin #33 Big Eddy Unit P-4-20S-31E

1<sup>st</sup> Salt 1,060 (spl)

Base/Salt - Top Tansill 2,160' (spl)

Yates in spl gap 2,330'-2,340' (spl)

Lamar Ls 4,337' (laterolog)

Delaware sand 4,380' (laterolog) 4,410' (spl)

Bone Springs 7,190' (laterolog + short gamma ray interval)

Wolfcamp 10,430' (gamma ray/laterolog)

E. The improperly included "Proposed Re-entry and Completion Plan" showing the 3-1/2" liner was certainly a different, and erroneous, plan. It also presented potentially challenging problems as to future unknown remedial work, plus mechanical challenges of completing the well as shown. While it could be done, it makes better sense to inject as this "corrected" submittal demonstrates. This plan is what was originally intended, but was messed-up.

Your Last Paragraph. It would appear that your questions as to the cementing of the 5-1/2" have been addressed. We will be testing the casing during re-entry, and later as is appropriate.

Respectfully submitted,



Kay Havenor

## **Jones, William V., EMNRD**

---

**From:** Jones, William V., EMNRD  
**Sent:** Monday, August 10, 2009 2:10 PM  
**To:** 'Kay Havenor'  
**Cc:** Kautz, Paul, EMNRD; Reeves, Jacqueta, EMNRD; Ezeanyim, Richard, EMNRD; Hall, John, NMENV  
**Subject:** Disposal application on behalf of Mesquite SWD Inc.: Big Eddy SWD#1 30-015-05819

Hello Kay:

Thanks for the updated information and charts and your research on cement tops and water wells. I have almost everything needed to release this Class II disposal permit – (roughly estimate it could be released on August 14)... but since the target injection interval appears to have a higher top, I must ask:

Looks like the disposal interval is an open hole from 12950 to 14205. The previous info seemed to only include the Siluro-Devonian but now includes some Mississippian formations above this.

Would you please:

1. list all the named disposal formations included in this proposed open hole disposal.
2. Talk briefly about the production potential of each of these – especially considering the new technologies of horizontal/fracturing and the possible presence of the Barnett Shale.
3. BEPCO is the operator of the Big Eddy Unit and the Unit seems it extends to all depths. Do they have any plans in this Unit to exploit these deep shales? Thank you for checking....
4. Does BEPCO have a copy of the revised "Proposed Disposal Completion" wellbore diagram?

Thank You,

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

---

**From:** Kay Havenor [mailto:khavenor@georesources.com]  
**Sent:** Saturday, July 11, 2009 3:53 PM  
**To:** Jones, William V., EMNRD  
**Subject:** RE: Notification for "Disposal application on behalf of Mesquite SWD Inc.: Big Eddy S"

Will,

Really weird! I emailed it to myself at a different site and it came through OK. Hmmmm, anyway, I sending it USPS. Again, it is the copies of the two return receipts on the Big Eddy notifications. Thanks for "illustrating" via the gibberish you had to try to read! It certainly makes the point -- very accurately!

Kay

At 03:08 PM 7/10/2009, you wrote:

Hello Kay: Here below is what came through... -----Original Message----- From: Kay Havenor [mailto:khavenor@georesources.com] Sent: Friday, July 10, 2009 2:18 PM To: Jones, William V., EMNRD Subject: Notification for "Disposal application on behalf of Mesquite SWD Inc.: Big Eddy S" %PDF-1.3 %Ã¢Ã£Ã “ 4 0 obj <</Linearized 1/L 1298722/O 7/E 1294876/N 1/T

**Jones, William V., EMNRD**

---

**From:** Kay Havenor [khavenor@georesources.com]  
**Sent:** Tuesday, August 11, 2009 3:20 PM  
**To:** Jones, William V., EMNRD  
**Cc:** Kautz, Paul, EMNRD; Reeves, Jacqueta, EMNRD; Ezeanyim, Richard, EMNRD; Hall, John, NMENV; Shore, Lawrence, NMENV  
**Subject:** Re: Disposal application on behalf of Mesquite SWD Inc.: Big Eddy SWD#1 30-015-05819  
**Attachments:** Response to Jones Barnett email.pdf

Will,

Thanks for the questions, attached as a PDF is my attempt to answer each one.  
Should you need additional info, please let me know.

Kay

At 02:10 PM 8/10/2009, Jones, William V., EMNRD wrote:

Hello Kay:

Thanks for the updated information and charts and your research on cement tops and water wells. I have almost everything needed to release this Class II disposal permit – (roughly estimate it could be released on August 14)... but since the target injection interval appears to have a higher top, I must ask:

Looks like the disposal interval is an open hole from 12950 to 14205. The previous info seemed to only include the Siluro-Devonian but now includes some Mississippian formations above this.

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4. Does BEPCO have a copy of the revised "Proposed Disposal Completion" wellbore diagram?

Thank You,

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

**From:** Kay Havenor [mailto:khavenor@georesources.com]  
**Sent:** Saturday, July 11, 2009 3:53 PM  
**To:** Jones, William V., EMNRD  
**Subject:** RE: Notification for "Disposal application on behalf of Mesquite SWD Inc.: Big Eddy S"

SNIP

Kay C. Havenor, Ph.D., PG. CPG  
GeoScience Technologies  
200 West First Street, Suite 747  
Roswell, NM 88203-4678  
(575) 622-0283

---

This inbound email has been scanned by the MessageLabs Email Security System.

---

August 11, 2009

Will,

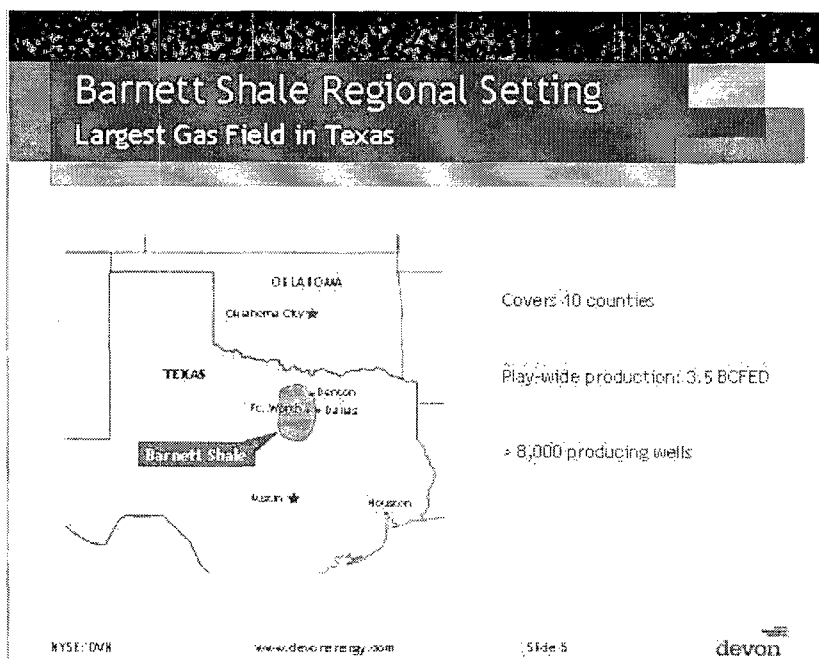
In response to your email of 8/10/09 here are my responses/answers. For clarity I have repeated your questions.

1. List all the named disposal formations included in this proposed open hole disposal.

The 5-1/2" casing is cemented into the top of the Barnett Shale overlying the Mississippian Limestone, Woodford Shale, and the Siluro-Devonian.

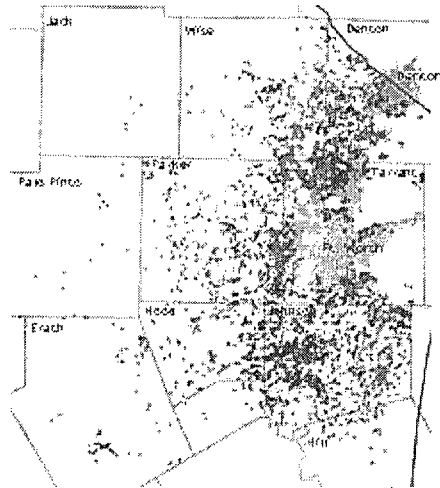
2. Talk briefly about the production potential of each of these - especially considering the new technologies of horizontal/fracturing and the possible presence of the Barnett Shale.

The Barnett Shale is strongly in the news as to gas production. However, the productive conditions found in North Texas have not been encountered much west of Pal Pinto County (Mineral Wells, TX). Devon Energy is a leading player in the Barnett development. The following slide (dated Mar 28, 2008) illustrates their classification of potential for Barnett gas:



This slide shows the present productive area.

## Defining the Barnett Shale Industry Horizontal Wells



Total horizontal wells  
drilled 2002 - 2007: 4,185



Estimated Ultimate Recovery (EUR)  
● 0-1 BCFE ● 1-1.5 BCFE ● 1.5-15.0 BCFE

Source: EUR based on initial production data from MS database and area analysis of hyperbolic decline.

NYSE: DVH

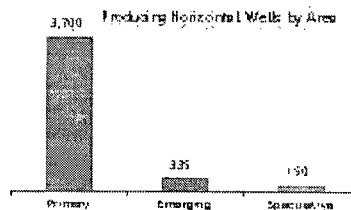
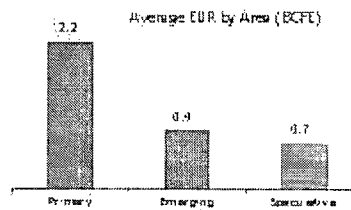
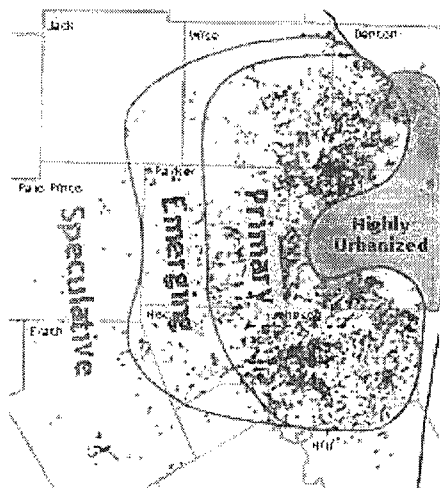
[www.devonenergy.com](http://www.devonenergy.com)

Slide 7

devon

This slide shows the western wells (blue) have a 0 to 1 BCF ultimate recovery.

## Defining the Barnett Shale Classification of Acreage Based on Results



NYSE: DVH

[www.devonenergy.com](http://www.devonenergy.com)

Slide 8

devon

This slide shows Devon's Barnett gas expectations on the western side of the Fort Worth basin as speculative.

The source of this information, accompanied by a telecast, is:

<http://webcastingplayer.corporate-ir.net/player/playerHOST.aspx?c=67097&EventId=1779724&StreamId=1077904&IndexId=&RGS=0>

The Barnett Shale in New Mexico has been greatly compromised by significant structural deformation. Devon also points out (not shown here) that areas in the North Texas play are eliminated for similar reasons. Because of Devon's extensive leaseholds in New Mexico, it is noteworthy that they have not included their Barnett acreage in their future potentials discussion. However, the thickness of the Barnett Shale in New Mexico is considerably thinner and may not be acceptable for the heavy fracturing used in the Fort Worth Basin. Additionally, the samples show the Barnett Shale to be gray rather than the black organic shales on North Texas. The color suggests the environment of deposition of the New Mexico Barnett was probably not as favorable for hydrocarbon generation.

The Mississippian Limestone underlies the Barnett Shale (where it has not been removed by late Paleozoic erosion). There are approximately 70 wells in southeastern New Mexico that have or do produce from the Mississippian. Most are low volume gas wells. It appears that most of the producing locations occur where late Paleozoic erosion has developed some porosity in the uppermost Mississippian limestones due to exposure of fault blocks and folds during the formation of Pangea. Additionally, it is highly probable that most of the gas results from Mississippian porosity contact with Pennsylvanian Morrow, Atoka, and Strawn resting unconformably on the upper Mississippian. There is exceptionally little effective porosity in the Mississippian Lime sequences of the Permian Basin.

In the proposed SWD well there is some low percent porosity in some of limestone immediately above the Woodford Shale, but that zone suggests low permeability and hydrocarbon absence. Both the overlying Barnett Shale and the underlying Woodford shale have typically very low horizontal permeability. It is not believed that disposed produced saltwater can or would migrate laterally. The Woodford Shale of the southeastern New Mexico is not known as either a potential reservoir nor a hydrocarbon source rock.

The Siluro-Devonian is a known hydrocarbon reservoir throughout the Permian Basin. It is, however, typically a structural reservoir and/or stratigraphically trapped due to sealing of uplifted and truncated reservoir rock. Where the Siluro-Devonian forms traps it is structurally controlled and water driven. The area of the Pan American test (this proposed SWD) is structurally low and is not associated with a known structural high or pinch-out. No hydrocarbons were recovered on drill-stem testing. The bottom of the hole is in the Siluro-Devonian.

3. BEPCO is the operator of the Big Eddy Unit and the Unit seems it extends to all depths. Do they have any plans in this Unit to exploit these deep shales?

Today I telephoned BEPCO, Midland, and posed the question you asked. Their engineer, Mr. Scott Doyle, said that all he could say is they do not have any permits pending for the Barnett or Woodford. In our discussion of the Barnett, Mr. Scott pointed-out that the Barnett is very thin

here as compared to the Fort Worth Basin's 400 to 500 ft plus, and that is an important difference.

4. Does BEPCO have a copy of the revised "Proposed Disposal Completion" wellbore diagram?

Yes, a copy was submitted to BEPCO , Midland, TX, on July 27, 2009.

Your email requested, for question 2, "Talk briefly about . . ." I apologize. It seems that *briefly* does not seem to appear in my dictionary.

Respectfully,

A handwritten signature in black ink that reads "Kay Havenor". The signature is written in a cursive, flowing style.

Kay Havenor  
GeoScience Technologies  
for Mesquite SWD, Inc.  
C-108 application

mostly BLM Land (May 1952) 152 365 Core 365

Injection Permit Checklist (7/8/08)

Case R- SWD 1186 WFX PMX IPI Permit Date 8/14/09 UIC Qt (A.S.O.)  
# Wells 1 Well Name: BIG Eddy SWD #1  
API Num: (30-) 015-05819 Spud Date: 11/23/61 New/Old: 0 (UIC primacy March 7, 1982)  
Footages 660 FSL/660 FEL Unit P Sec 3 Tsp 205 Rge 31E County Eddy  
Operator: Mosquito SWD, INC Contact Kay Haveron  
OGRID: 161968 RULE 40 Compliance (Wells) 2/14 (Finan Assur) OK = OK  
Operator Address: P.O. Box 1479, Carlsbad, NM 87221

Current Status of Well: P&AED  
Planned Work to Well: Re-enter, install 3 1/2" tubing, 3 1/2" @ 12,950  
Planned Tubing Size/Depth:

	Sizes Hole.....Pipe	Setting Depths	Cement Sx or Cf	Cement Top and Determination Method
Existing <input checked="" type="checkbox"/> Surface	17 1/2 13 1/8	440	750	CIRC
Existing <input checked="" type="checkbox"/> Intermediate	12 1/4 9 5/8	2365	750	CIRC
Existing <input checked="" type="checkbox"/> Long String	8 3/4 5 1/2		750	

DV Tool Liner 5 1/2 1135-12970 (25525) Total Depth 14205  
Well File Reviewed 3 1/2 12970-13930 (1555X)

Diagrams: Before Conversion ☒ After Conversion ☒ Elogs in Imaging File: ☒

Intervals:	Depths	Formation	Producing (Yes/No)
Above (Name and Top)	13738	WOODFORD	
Above (Name and Top)	13930	TOP of Dev.	
Injection.....	12950		
Interval TOP:	12950	STURGEON	
Injection.....	14205	SILVERDEN	
Interval BOTTOM:			
Below (Name and Top)			

no Production within 1/2 mi in any depth  
MISS 2590 PSI Max. WHIP  
Yes Open Hole (Y/N)  
no Deviated Hole?

Sensitive Areas: Capitan Reef yes Cliff House Salt Depths  
.... Potash Area (R-111-P) yes Potash Lessee Noticed?

Fresh Water: Depths: 0-115-130 Wells(Y/N) Analysis Included (Y/N): No Affirmative Statement ☒

Salt Water: Injection Water Types: Penn/WC/Penn Analysis?

Injection Interval.....Water Analysis: Hydrocarbon Potential none tested when drilled

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

RULE 701B(2) Affected Parties: BEPCO as operator of BIG Eddy UNIT

Area of Review: Adequate Map (Y/N) ☒ and Well List (Y/N) ☒

Active Wells 0 Num Repairs Producing in Injection Interval in AOR  
..P&A Wells 0 Num Repairs All Wellbore Diagrams Included?

Questions to be Answered:  
Proposed Completion Plan 3 1/2" tubing  
Sand Bridge on outside of TRAP  
insulating within 6 months of start (if P&A)

Required Work on This Well: Request Sent Reply:

AOR Repairs Needed: Request Sent Reply:

was old  
Wf Kay Coas well  
will be new  
BIG Eddy WC Co  
REL  
13930  
27860

12950  
2590