

BW - 27

**GENERAL
CORRESPONDENCE**

2009

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Wednesday, July 20, 2016 3:26 PM
To: 'David.Alvarado@basicenergyservices.com'; 'gandy2@leaco.net';
'james@pabservicesinc.com'; 'Jerry@Pyotewatersystems.com';
'tboone@keyenergy.com'; 'Garymschubert@gmail.com'; 'tony@waternex.com'
Cc: Griswold, Jim, EMNRD; Whitaker, Mark A, EMNRD; Inge, Richard, EMNRD
Subject: New Mexico UIC Class III Brine Well MIT Scheduling with Completion by December 30, 2016

Ladies and Gentlemen:

UIC Class III Brine Wells:

Basic Energy Services: BW-002 (Last MIT: 8/28/2012)
Gandy Corporation: BW-004 (Last MIT: 10/18/2011) & BW-022 (Last MIT: 10/18/2011)
Key Energy Services, LLC: BW-028 (Last MIT: 9/10/2010)
Pyote: BW-027 (MITs on 2-Well System Last MIT: 2/25/2010) & BW-030 (Last MIT: 12/28/2010)
Standard Energy: BW-008 (Last MIT: 11/16/2010)
HRC: BW-031 (Last MIT: 8/13/2009)

Good afternoon. It is that time of year again to remind operators that their MITs for this season must be completed by 12/30/2016. The list of permittee names w/ associated brine wells are provided above and as in the past, the OCD District Offices (see information provided below) attempt to schedule MITs logistically based on their busy schedules. You must submit a signed [C-103 Form](#) describing your MIT for OCD District Office approval.

Please contact your OCD District Office (see contact info. below) to schedule your MITs based on the County that your wells reside.

Mark Whitaker ([Hobbs District Office](#))
Richard Inge ([Artesia District Office](#))

Operators are aware of the annual formation MIT (4-hr @ 300 psig or less depending on historical pressure and TD of well) and every 5-yrs. or after well workover. EPA MIT (30 min. @ 500 psig). Operators need to review well MIT records for the type of MIT it will run this year and inform the OCD District Office of any issues or concerns associated with this season's MIT.

Also, Permittees should review your Discharge Permits for expiration. If your permit has expired or will soon expire, please contact me to discuss your situation(s).

You may access your well information on OCD Online either by API# and/or Permit Number at:

<http://ocdimage.emnrd.state.nm.us/imaging/AEOrderCriteria.aspx> and
<http://wwwapps.emnrd.state.nm.us/ocd/ocdpermitting/Data/Wells.aspx>.

For information on New Mexico's UIC Program and training information, please go to:
<http://www.emnrd.state.nm.us/OCD/publications.html>.

Please contact me if you have questions. Thank you in advance for your cooperation in this matter.

Carl J. Chavez, CHMM

Environmental Engineer
Oil Conservation Division- Environmental Bureau
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
Phone: (505) 476-3490
Main Phone: (505) 476-3440
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: www.emnrd.state.nm.us/oed

Why not prevent pollution, minimize waste, reduce operation costs, and move forward with the rest of the Nation? To see how, go to “Publications” and “Pollution Prevention” on the OCD Website.

NOTICE OF PUBLICATION

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

Notice is hereby given pursuant to New Mexico Water Quality Control Commission Regulations (20.6.2.3106 NMAC), the following discharge permit application has been submitted to the Director of the New Mexico Oil Conservation Division (OCD), 1220 S. Saint Francis Drive, Santa Fe, New Mexico 87505, Telephone (505) 476-3440:

(BW-27) Mesquite SWD, Inc., PO Box 1479, Carlsbad, New Mexico 88221 has submitted an application for renewal of the discharge plan for the brine station located in Section 23, Township 22 South, Range 27 East, NMPM, Eddy County, east of Otis, NM. Fresh water is injected into the subsurface at a depth of approximately 1,064 feet thereby solution mining salt. The extracted brine has an approximate dissolved solids concentration of 350,000 mg/l. The brine is stored in above-ground tanks for use by the oil and gas industry. Groundwater most likely to be affected by a spill or leak is at a depth of approximately 50 feet with a total dissolved solids concentration of 4,000 mg/l. The plan addresses how spills and leaks will be managed in order to protect fresh water.

The OCD has determined that the application is administratively complete and is preparing a draft permit. The OCD will accept comments and statements of interest regarding this application and create a facility-specific mailing list for persons who wish to receive future notices. Persons interested in obtaining further information, submitting comments or requesting to be on a facility-specific mailing list for future notices may contact the Environmental Bureau of the Oil Conservation Division at the address given above. The application may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday, or at the OCD web site <http://www.emnrd.state.nm.us/ocd/>. Persons interested in obtaining a copy of the application may contact the OCD at the address above. Prior to ruling on any proposed discharge permit or major modification, the Director shall allow a period of at least thirty (30) days after the date of publication of this notice, during which interested persons may submit comments or request the OCD hold a public hearing. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed permit based on information available, including all comments received. If a public hearing is held, the director will approve or disapprove the proposed permit based on information in the permit application and information submitted at the hearing.

Para obtener más información sobre esta solicitud en español, sirvase comunicarse por favor: New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energia, Minerals y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conservación Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New México (Contacto: Dorothy Phillips, 505-476-3461)

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 7th day of October, 2009.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

S E A L

Mark Fesmire, Director

Griswold, Jim, EMNRD

From: Griswold, Jim, EMNRD
Sent: Monday, November 09, 2009 8:38 AM
To: 'khavenor@georesources.com'
Subject: BW-27

Dr. Havenor,

Carl Chavez forwarded to me your email of Nov. 6 regarding public notice requirements (specifically the posting of signs) with respect to renewal of Clay Wilson's brine well permit, BW-27. Under the NM Water Quality Control Regulations (20.6.2.3108 B (1) NMAC) the public notice otherwise posted in the local newspaper must also be put on signs in both English and Spanish. Each sign must be at least 2 by 3 feet in size. One sign needs to be posted in plain sight at the facility for at least 30 days. Another similar sign needs to be posted at another public location off-site (such as at a post office). Verification of these signs be posted must also be provided to the OCD. This can be accomplished using photographs, digital or otherwise, which you can forward to me. Verification of the newspaper advertisement must also be provided to the OCD.

Jim Griswold
Senior Hydrologist
Environmental Bureau
ENMRD/Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
direct: 505.476.3465
email: jim.griswold@state.nm.us

Griswold, Jim, EMNRD

From: Clay Wilson [claywilson@pccnm.com]
Sent: Tuesday, December 22, 2009 10:47 AM
To: Griswold, Jim, EMNRD
Subject: Fw: Carlsbad Brine
Attachments: 12-22-09 022.JPG; 12-22-09 023.JPG; 12-22-09 024.JPG; 12-22-09 025.JPG; November 09 001.JPG

Jim,
I got the sign up today 22 of December 2009 will keep up for the 30 days or longer it took them all this time to make it. What else do I need to do for you, I will put a flyer at the BLM office in the morning.
I could not get the picture of me deleted
Have a Merry Christmas.

Thanks
Clay

----- Original Message -----

From: Mark Forrest
To: claywilson@pccnm.com
Sent: Tuesday, December 22, 2009 10:30 PM
Subject: Carlsbad Brine

This inbound email has been scanned for malicious software and transmitted safely to you using Webroot Email Security.

Mesquite SWD, Inc., Clay L. Wilson, (575-706-1840) President, P.O. Box 1479, Carlsbad, New Mexico 88221, has submitted an application for the renewal of a discharge plan for the Carlsbad brine production facility, BW-27, located in the SW/4 NW/4 of Section 23 South, Range 27 East, NMPM, Eddy County, New Mexico.

Up to 80 barrels per hour at an operating pressure of 150 psig of 1.2 specific gravity brine water is produced for use in the oil industry. Groundwater most likely to be affected by a spill, leak, or accidental discharge to the surface is at a depth of approximately 50-200 feet with a total dissolved solids concentration of approximately 4000 mg/l.

The discharge plan addresses how spills, leaks, and other accidental discharges to the surface will be managed.

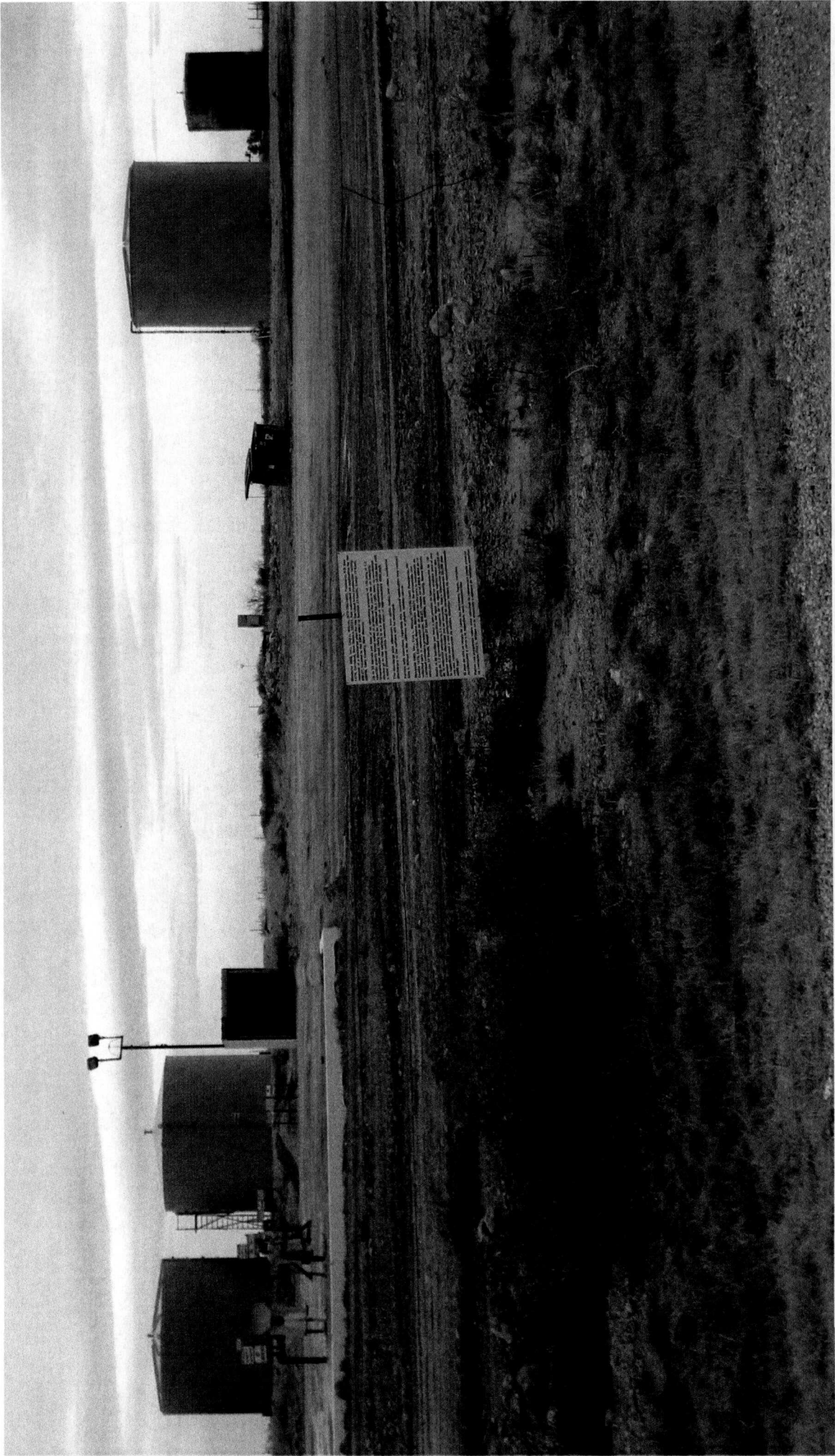
Parties with questions regarding this renewal application may contact Clay L. Wilson at the address or phone number above.

Mesquite SWD, Inc., Clay L. Wilson, (575-706-1840) Presidente, PO Casilla 1479, Carlsbad, Nuevo México 88221, ha presentado una solicitud para la renovación de un plan de alta para la instalación de Carlsbad salmuera producción, BW-27, situado en el SW/4 NW/4 de la sección 23 South, Range 27 East, NMPM, Eddy County, Nuevo México.

Hasta el 80 barriles por hora a una presión de funcionamiento de 150 psig de 1.2 gravedad específica del agua salada se produce para el uso de la industria petrolera. La mayoría de las aguas subterráneas que puedan verse afectadas por un derrame, fuga o liberación accidental de la superficie está a una profundidad de aproximadamente 50-200 pies con una concentración de sólidos disueltos totales de aproximadamente 4000 mg/l.

El plan de alta se ocupa de cómo los derrames, fugas, vertidos accidentales y otros a la superficie será administrado.

Partes con preguntas sobre esta solicitud de renovación puede ponerse en contacto Clay L. Wilson en la dirección o número de teléfono anterior.



Chavez, Carl J, EMNRD

From: Griswold, Jim, EMNRD
Sent: Friday, January 08, 2010 5:03 PM
To: Clay Wilson
Cc: Chavez, Carl J, EMNRD
Subject: Mesquite brine well (BW-27)

Clay,

This email is to memorialize our telephone conversation of this afternoon regarding requirements under Discharge Permit BW-27 for Mesquite's brine production facility located east of Otis, NM. It will be helpful for you to review the last permit renewal paperwork with the approval conditions that was issued to Mesquite on 7/5/05. As part of those approval conditions an Annual Report must be filed with the OCD by the first day of January of each year. That report needs to contain:

1. The volume of fresh water injected and the volume of brine produced on a monthly basis for each month of the year. We now have monthly brine production data from January of 2004 thru December 2009. We only have annual freshwater injection over the same time. Mesquite needs to continue its efforts to get historic information, hopefully going all the way back to when the facility first went into production back in early-1995.
2. The results of independent lab analyses of both the fresh water and brine. Those samples need to be assayed for pH, total dissolved solids, anions and cations (fluoride, chloride, nitrate, nitrite, phosphorus, and sulfate) by Method 300, and dissolved metals (arsenic, barium, cadmium, calcium, chromium, lead, magnesium, potassium, selenium, silver, and sodium) by Method 6010
3. Information on the size and extent of the cavern and geologic/engineering data demonstrating that continuation of operations will not result in significant surface subsidence or cavern collapse. Sonar surveys can provide this information if they are run properly. If the sonar cannot be run, then the historic brine production might be the only other data we can look at. If the sonar is undertaken, whether or not it works in defining the cavern, a casing MIT must be run before returning to production. That MIT and the sonar survey should be witnessed by OCD personnel. If the sonar appears successful, the production data requested in item 1 may not be as critical, but please work to get it nonetheless.

It is very important that you send me a letter formally asking for a time extension to get this work completed before 3/1/10 and submitted in your annual report. The OCD can allow this extension for good cause as you have attempted to meet the 1/1/10 deadline. Thanks.

Jim Griswold
Senior Hydrologist
Environmental Bureau
ENMRD/Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
direct: 505.476.3465
email: jim.griswold@state.nm.us

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, January 08, 2010 6:19 AM
To: Griswold, Jim, EMNRD
Cc: 'Clay Wilson'; VonGonten, Glenn, EMNRD
Subject: FW: UIC Class III Well Annual Report Schedule for Submittal & Content REMINDER- 2010 (BW-027)

Jim:

I see this morning after reviewing the correspondence file online that Mr. Wilson submitted some production data from 2004 to 2009, since he became the new owner of the facility.

It appears from summing up the 2009 information from the two-well system provided by Mr. Wilson from 2004 - 2009, we know the following:

Total Brine Produced (Dunaway #1) ~ 3,752,155 bbls.

Total Fresh Water Injected (Dunaway #2) ~ 4,525,159 bbls.

Mr. Wilson, by receipt of this e-mail, it appears that you may need to seek out the prior production information from the well(s). I think it would be beneficial for you to seek out the previous owner of the well for the production records prior to 2004, since as the purchaser of the well, you were obligated to review the records and retain them as your records during the transfer of well process, etc. From my recollection, you were also unable to sonar the well(s) due to mechanical issues, which makes the production information more vital to have. You may also contact Jim Griswold to discuss other potential geophysical methods to determine the cavern size and configuration in lieu of production data.

Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

From: Chavez, Carl J, EMNRD
Sent: Thursday, January 07, 2010 5:11 PM
To: 'Clay Wilson'
Cc: Griswold, Jim, EMNRD; VonGonten, Glenn, EMNRD
Subject: RE: UIC Class III Well Annual Report Schedule for Submittal & Content REMINDER- 2010 (BW-027)

Clay:

Re: Annual Reporting: Total Brine Production (448,377 bbls) and Total Fresh Water Injection (359,177 bbls)

The OCD appreciates the information that you sent in order to satisfy Sections 7 and 8 of your discharge permit; however, OCD is requesting the monthly values along with the cumulative volumes to date throughout the history of your two-well brine well production system in order to have a better understanding of the subsurface salt cavern size or "maturity" of your brine well production system. The OCD is also requesting analytical data from the produced brine at your facility.

You are aware of the two brine well collapses in New Mexico in 2009 and the OCD and USEPA certainly want to be more progressive in our evaluation of brine production wells in New Mexico in order to better protect public health and safety.

Based on the history and current situation with brine production wells in New Mexico, the OCD with the assistance of brine well operators are evaluating the age of the brine production well or system, its construction, injection/production volumes, annual mechanical integrity testing, chemical data from produced brine, and cavern configuration through sonar testing where possible to better assess risk from brine well operations in New Mexico. When it is not possible to conduct a sonar test, the injection and production data becomes the main tool for the OCD to estimate the size and volume of salt cavern for "maturity" and/or the protection of human health, public safety, and the environment (USDW).

7. Production/Injection Volumes: The volumes of fluids injected (fresh water) and produced (brine) will be recorded monthly and submitted to the OCD Santa Fe Office in an annual report due on the first day of January of each year.

8. Analysis of Injection Fluid and Brine: Provide an analysis of the injection fluid and brine with each annual report. Analysis will be for General Chemistry (method 40 CFR 136.3) using EPA methods.

Please confirm that you have received this e-mail and submit the information to the OCD by close of business on Monday, February 8, 2010.

Thank you in advance for your cooperation and effort to help protect human health, public safety and the environment from your brine well operation in New Mexico. Please contact me if you have any questions.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

From: Clay Wilson [mailto:claywilson@pccnm.com]
Sent: Thursday, January 07, 2010 4:12 PM
To: Chavez, Carl J, EMNRD
Subject: Re: UIC Class III Well Annual Report Schedule for Submittal & Content REMINDER- 2010

Carl,

Here are the totals of brine and fresh water from Mesquite SWD Inc BW- 27. Thru 1-1-2009 to 12-31-2009.

Total brine 448,377.00 bbls

Total fresh 359,177.00 bbls

I think this all that you need from Mesquite at this time if I'm wrong please let what else you will need.

Thanks

Clay

----- Original Message -----

From: Chavez, Carl J, EMNRD
To: Prather, Steve ; gandy2@leaco.net ; James Millett ; Clay Wilson ; Bob Patterson ; David Pyeatt ; garymschubert@aol.com ; Gary Schubert
Cc: Griswold, Jim, EMNRD ; VonGonten, Glenn, EMNRD ; Sanchez, Daniel J., EMNRD
Sent: Wednesday, November 18, 2009 2:02 PM
Subject: UIC Class III Well Annual Report Schedule for Submittal & Content REMINDER- 2010

Gentlemen:

Good morning. You may recall an e-mail message from me this past Summer alerting you to the reporting provision of your current discharge permit (permit) and how the New Mexico Oil Conservation Division (OCD) is stepping up its efforts to track reporting under issued permits.

Please find attached a spreadsheet listing the dates that OCD expects to receive your Annual Reports and/or any reporting requirements from your permit. If you are an operator with limited reporting requirements based on your permit, you are welcome to follow the format and content required from more recent permit renewals issued by the OCD, which are more comprehensive and constitute a report. Any renewed permits will likely require similar content anyway.

Please plan on meeting the Annual Report submittal dates in January of 2010 as failure to submit the report will constitute a violation under the Federal Underground Injection Control (UIC) Program and reporting to the United States Environmental Protection Agency, which could result in the shut-in and/or plug and abandonment of your brine production well.

Please contact me if you have questions. Thank you in advance for your cooperation in this matter.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>
(Pollution Prevention Guidance is under "Publications")

CC: Brine Well File "Annual Reporting"

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Chavez, Carl J, EMNRD

From: Griswold, Jim, EMNRD
Sent: Thursday, January 07, 2010 6:37 PM
To: Chavez, Carl J, EMNRD
Subject: Mesquite brine well (BW-27)

Carl,

Clay Wilson previously provided me with monthly production and annual injection data from January 2004 thru October 2009. We are both trying to obtain earlier information (brine production began in September of 1993) from the prior owner (Scurlock Permian, which was actually owned by Plains Pipeline).

Jim Griswold
Senior Hydrologist
Environmental Bureau
ENMRD/Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
direct: 505.476.3465
email: jim.griswold@state.nm.us

Mesquite SWD, Inc.
P.O. Box 1479
Carlsbad, NM 88221-1479

11-10-2009

Jim Griswold
OCD Santa Fe
1220 South St. Francis Drive
Santa Fe, NM 87505

Dear Jim;


I have attached a schedule which includes the barrels of brine and the fresh water used from the Dunaway #1, API 39-015-28083, Section 23 Township 22S Range 27E, Brine well #27. I have provided the monthly barrels of brine used from 2004 through 2009. However, I could only provide the annual usage of fresh water.

I could not find any information on Scurlock Permian Production. There was no information in the well file when we purchased the brine station from them.

Mesquite SWD, Inc. has installed a barrel counter to monitor the fresh water being injected. Mesquite will be able to send you a quarterly report on the amount of fresh water being injected and the number of barrels of brine produced.

If there is anything else I can help you with, just let me know.

Thank you,


Clay L. Wilson
President

Mesquite SWD, Inc.

	2004	2005	2006	2007	2008	2009
January	13174	56344	64631	64828	67113	44653
February	19540	40873	55049	69488	40425	25080
March	36299	56333	75690	66944	53350	24702
April	26511	59298	49858	60048	40642	21882
May	30539	51617	85069	61783	38265	19308
June	26737	76355	82357	71981	46476	16317
July	31138	51358	80894	67798	55656	18051
August	34938	52769	79086	56234	60962	21855
September	38413	47750	47406	46628	68395	20404
October	52209	71932	71040	65980	65561	32986
November	53868	66456	55763	48085	46620	
December	56186	48890	66003	53967	44182	

Total BBL's Brine

2004	419,552	
2005	709,975	
2006	812,846	Dunaway #1
2007	733,758	
2008	627,647	
2009	245,238	

Total F/W

2004	545,417	
2005	922,967	
2006	1,056,699	Dunaway #2
2007	823,072	
2008	817,827	
2009	314,279	

Mesquite SWD, Inc.
P.O. Box 1479
Carlsbad, NM 88221-1479

11-10-2009

Jim Griswold
OCD Santa Fe
1220 South St. Francis Drive
Santa Fe, NM 87505

Dear Jim;

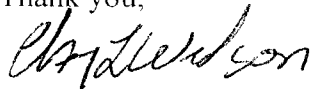
I have attached a schedule which includes the barrels of brine and the fresh water used from the Dunaway #1, API 39-015-28083, Section 23 Township 22S Range 27E, Brine well #27. I have provided the monthly barrels of brine used from 2004 through 2009. However, I could only provide the annual usage of fresh water.

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If there is anything else I can help you with, just let me know.

Thank you,

A handwritten signature in black ink, appearing to read "Clay L. Wilson".

Clay L. Wilson
President

Mesquite SWD, Inc.

	2004	2005	2006	2007	2008	2009
January	13174	56344	64631	64828	67113	44653
February	19540	40873	55049	69488	40425	25080
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September	38413	47750	47406	46628	68395	20404
October	52209	71932	71040	65980	65561	32986
November	53868	66456	55763	48085	46620	
December	56186	48890	66003	53967	44182	

Total BBL's Brine

2004	419,552	
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Total F/W

2004	545,417	
2005	922,967	
2006	1,056,699	Dunaway #2
2007	823,072	
2008	817,827	
2009	314,279	

**NOTICE OF
PUBLICATION**

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

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations (20.6.2.3106 NMAC), the following discharge permit application(s) has been submitted to the Director of the New Mexico Oil Conservation Division ("NMOCD"): 1220 S. Saint Francis Drive, Santa Fe, New Mexico 87505. Telephone (505) 476-3440.

(GW-397) DCP Midstream L.P., 370 17th Street, Suite 2500, Denver, Colorado 80202 has submitted a new discharge plan application for their Rambo Compressor Station located in NW 1/4 SE 1/4 of Section 9, Township 21 South, Range 27 East, NMPM, Eddy County. The facility provides natural gas compression for the locale gathering system. Approximately 210 bbls/month of produced water, 420 bbls of condensate, 550 gallons of wash water and 800 gallons/year of used oil are generated and stored in onsite. Groundwater most likely to be affected by a spill, leak or accidental discharge is at a depth of approximately 1090 feet, with a total dissolved solids concentration of approximately 76.9 mg/L.

(GW-049) Mr. Richard Duarte, Principle Environmental Representative, El Paso Natural Gas Company, 8725 Alameda Park Drive NE, Albuquerque, N.M., has submitted a renewal application for the previously approved discharge

plan for their Blanco A compressor station, located in Section 11 & 14, Township 29 North, Range 11 West, NMPM, San Juan County. The facility compresses natural gas. Approximately 17000/gallons of engine oil, 908 gallons of inhibitors and 1000 gallons of gasoline are generated and stored in onsite. Groundwater most likely to be affected by a spill, leak or accidental discharge is at a depth of approximately 14 - 39 feet, with a total dissolved solids concentration of approximately 640 - 6700 mg/L.

(GW-021) Oxy USA WTP Limited Partnership, 5 Greenway Plaza, Houston TX 77046 has submitted a renewal application for the previously approved discharge plan for their Indian Basin Gas Plant, 329 Marathon Road, County road 401, Lakewood, N.M. located in the NE 1/4 Section 23, Township 21 South, Range 23 East, NMPM, Eddy County. The facility processes natural gas. Oxy acquired this facility from Marathon Oil in July, 2009. Approximately 200 bbls/day of produced water, 195 bbls/day of process effluents and 50 bbls/day of waste water are generated and stored in onsite. Groundwater most likely to be affected by a spill, leak or accidental discharge is at a depth of approximately 15 - 25 feet, with a total dissolved solids concentration of approximately 380 - 5900 mg/L.

(BW-8) Salty Dog, Inc., PO Box 2724, Lubbock Texas 79408 has submitted an application for renewal of the discharge plan for their brine station located in Section 5, Township 19 South, Range 36 East, NMPM, Lea County, NM. Ground-

water pumped from the regional aquifer is injected into the subsurface at a depth of approximately 1,871 feet thereby solution mining salt. The extracted brine has an approximate dissolved solids concentration of 350,000 mg/l. The brine is stored in above-ground tanks for use by the oil and gas industry. Groundwater most likely to be affected by a spill or leak is at a depth of approximately 70 feet with a total dissolved solids concentration of 400 mg/l. The plan addresses how spills and leaks will be managed in order to protect fresh water.

(BW-25) Basic Energy Services, LP, PO Box 10460, Midland, Texas 79702 has submitted an application for renewal of the discharge plan for the brine station located in Section 20, Township 25 South, Range 37 East, NMPM, Lea County, east of Jal, NM. Fresh water from the city is injected into the subsurface at a depth of approximately 1,100 feet thereby solution mining salt. The extracted brine has an approximate dissolved solids concentration of 350,000 mg/l. The brine is stored in above-ground tanks for use by the oil and gas industry. Groundwater most likely to be affected by a spill or leak is at a depth of approximately 40 feet with a total dissolved solids concentration of 875 mg/l. The plan addresses how spills and leaks will be managed in order to protect fresh water.

(BW-27) Mesquite SWD, Inc., PO Box 1479, Carlsbad, New Mexico 88221 has submitted an application for renewal of the discharge plan for the brine station located

in Section 23, Township 22 South, Range 27 East, NMPM, Eddy County, east of Otis, NM. Fresh water is injected into the subsurface at a depth of approximately 1,064 feet thereby solution mining salt. The extracted brine has an approximate dissolved solids concentration of 350,000 mg/l. The brine is stored in above-ground tanks for use by the oil and gas industry. Groundwater most likely to be affected by a spill or leak is at a depth of approximately 50 feet with a total dissolved solids concentration of 4,000 mg/l. The plan addresses how spills and leaks will be managed in order to protect fresh water.

The NMOCD has determined that the application is administratively complete and has prepared a draft permit. The NMOCD will accept comments and statements of interest regarding this application and will create a facility-specific mailing list for persons who wish to receive future notices. Persons interested in obtaining further information, submitting comments or requesting to be on a facility-specific mailing list for future notices may contact the Environmental Bureau Chief of the Oil Conservation Division at the address given above. The administrative completeness determination and draft permit may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday, or may also be viewed at the NMOCD website <http://www.emnrd.state.nm.us/ocd/>. Persons interested in obtaining a copy of the application and draft permit may contact the NMOCD at the address given above.

press given above. Prior to ruling on any proposed discharge permit or major modification, the Director shall allow a period of at least thirty (30) days after the date of publication of this notice, during which interested persons may submit comments or request that NMOCD hold a public hearing. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed permit based on information available, including all comments received. If a public hearing is held, the director will approve or disapprove the proposed permit based on information in the permit application and information submitted at the hearing.

Para obtener más información sobre esta solicitud en español, sírvase comunicarse por favor: New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energía, Minerales y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conservación Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New Mexico (Contacto: Dorothy Phillips, 505-476-3461)

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 7th day of October 2009.

STATE OF NEW MEXICO
OIL CONSERVATION
DIVISION

SEAL
Mark Fesmire, Direc-

for
Legal#
Pub. October 13, 2009

Santa Fe New Mexican 10/13/09

Mesquite SWD, Inc.
P.O. Box 1479
Carlsbad, NM 88221-1479

Jim Griswold
NM OCD
1220 S. Saint Francis Drive
Santa Fe, NM 87505

July 29, 2009

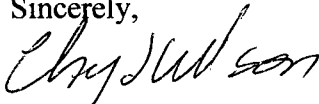
RE: Discharge Plan Renewal for Carlsbad Brine Production Facility BW-027 Eddy
County

Dear Sir,

Attached is the renewal for Mesquite SWD, Inc. Brine Production facility. Also
enclosed is a check for the filing fee \$100.00, check #3570.

If you have any questions please call me at 575-706-1840.

Sincerely,



Clay L. Wilson
President

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Revised June 10, 2003

Submit Original
Plus 1 Copy
to Santa Fe
1 Copy to Appropriate
District Office

DISCHARGE PLAN APPLICATION FOR BRINE EXTRACTION FACILITIES

(Refer to the OCD Guidelines for assistance in completing the application)

☐ New ☒ Renewal

I. Facility Name: Carlsbad Brine Facility

II. Operator: Mesquite SWD, Inc.

Address: P.O. Box 1479 Carlsbad, NM 88221

Contact Person: Clay Wilson Phone: 575-706-1840

III. Location: SE /4 NW /4 Section 23 Township 22-S Range 27-E
Submit large scale topographic map showing exact location.

IV. Attach the name and address of the landowner of the facility site.

V. Attach a description of the types and quantities of fluids at the facility.

VI. Attach a description of all fluid transfer and storage and fluid and solid disposal facilities.

VII. Attach a description of underground facilities (i.e. brine extraction well).

VIII. Attach a contingency plan for reporting and clean-up of spills or releases.

IX. Attach geological/hydrological evidence demonstrating that brine extraction operations will not adversely impact fresh water.

X. Attach such other information as is necessary to demonstrate compliance with any other OCD rules, regulations and/or orders.

XI. CERTIFICATION:

I hereby certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Name: Clay L. Wilson

Title: President

Signature: Clay Wilson

Date: 7-15-09

E-mail Address: claywilson@pccnm.com

A DISCHARGE PLAN
FOR
BRINE EXTRACTION FACILITIES
OF
MESQUITE SWD, INC.

Well site known as
CARLSBAD BRINE FACILITY
DUNAWAY NO. 1 AND DUNAWAY NO. 2
BRINE PRODUCTION FACILITY BW-027

Located in
SE/4 NW/4 Sec 23 T-22-S, R-27-E
Eddy county, NM

Forni Rd. East of Highway 216
Carlsbad, NM

Prepared for compliance with
New Mexico Water Quality Control Regulations

Facility Name: Mesquite SWD, Inc
Carlsbad Brine Station
(BW-027)

II. Operator: Mesquite SWD, Inc.
P.O. Box 1479
Carlsbad, NM 88221

Contact Person: Clay L. Wilson
505-706-1840

III. Location. SE / 4 NW / 4 Section 23
T-22-S R-27-E
Eddy County, New Mexico

County Road 216
Carlsbad, New Mexico

(See Map Labeled Exhibit "A & C")

IV. Landowner:

Ray Dunaway	Jim Dunaway
4307 Sycamore	P.O. Box 81
Carlsbad, NM	Taylor, AZ 85939
Jerry Dunaway	Darlene Cowan
P.O. Box 424	440 Jensen
Snowflake, AZ 85937	Grants, NM 87020

V. Type and Quantities of Fluids Stored at this Facility:

No surface storage pits are in use at this facility

This facility stores fresh water and brine water produced from the underground salt formation at site. No other fluids are stored at this facility. Fresh water is produced from a water well located at the facility and stored in an above ground 3000 Bbl cone roof storage tank. This fresh water is pumped at a rate of about 90 BPH down the tubing of either brine well. Salt brine is recovered up the tubing of the other well and stored in seven 1,000 Bbl. internally coated, above ground, cone roof storage tanks (Added 4-1000 Bbl brine storage tanks-new storage area lined with 40 mil plastic, 7,000 Bbl total volume). These tanks are located inside a polyethylene (Permalon Ply x-210) lined dike area. Exhibit "F" in Attachment Index shows Containment Liner Design and

Specification. The dike area is sized to hold more than 133% of the brine tanks combined capacity. Volume of brine production is determined by level of area oil and gas drilling activities and varies from month to month.

VI. Fluid Transfer and Storage:

- A. Fresh water is received into the 3000 Bbl above ground storage tank via polyethylene pipe from fresh water well located at the facility. Polyethylene pipe connects the fresh water down the tubing of the one brine well at a rate of 90 BPH and normal operating pressure of 150 psi. Brine water is produced up the tubing of the other brine well and delivered into the seven above ground 1,000 Bbl. internally coated, cone roof, steel, tanks through polyethylene pipe. Except the well, all piping is considered low-pressure operation with pressure near tank head pressure that is less than 40 psi. (Exhibit "B")

Fresh water and brine water is transported from the site by tanker truck for sale and use in oil and gas production operations. Tanker trucks are positioned inside a polyethylene-lined dike loading area to retain fluids in the event abnormal condition results in a spill. Brine water flows at storage tank head pressure through piping positioned above the polyethylene liner to a header valve. Tanker truck mounted pumps are connected to the header valve by a truck-mounted hose and the pump pulls the fluid from the header valve and discharges it into the tanker. When loading is complete, the operator closes the header valve and parts the connection from the header valve with the pump still running in the "load" position to empty the hose preventing spills or drips. As an additional precaution, a drip barrel is located at the header valve to catch any drips that might occur during the loading process. The truck driver is in charge of the loading process and does not leave the loading area during the transfer process. The driver fills out paper work and leaves a ticket for the volume of brine or fresh water hauled on each load. The ticket volumes are used in billing brine sales and comparing volumes of fresh water and brine production for system integrity.

A water meter is located at the fresh water well and provides the volume of fresh water used at the facility. The brine well injection pump is a positive displacement pump. This pump generally pumps at the same flow rate with minor changes in system operation. A pressure chart on pump discharge provides pressure recording and pump run time. Run time multiplied by pump flow rate

gives an indication of water volume pumped into the formation and brine water recovered. Tank volume gauges, fresh water meter readings, pump run time, and product sale tickets can be compared to give a general insight into the integrity of the facility operation. The volume of fresh water injected and the volume of produced brine are to be recorded monthly and submitted to the OCD office in Santa Fe.

Tanks are above ground for visual leak inspection and detection. Storage tanks and truck loading operations are located in poly-lined dike areas (see attachments for designs and specifications) to contain any spillage that may occur. Dike areas prevent run-off of storm water. Storm waters are either allowed to evaporate or vacuumed up and hauled to an approved disposal site.

Integrity testing of the well is conducted annually. Piping is pressure tested at intervals not to exceed five years.

Water samples from the fresh water well are analyzed to check for potential contamination.

B. Fluid and Solid Disposal:

No fluids or solids are disposed of at this site. All brine fluids are sold for use in oil and gas production. In the event brine fluid disposal would be required, the brine will be taken to OCD approved disposal well. Solids such as chloride contaminated soils will be taken to an approved disposal site.

General Closure Plan

Should it become necessary to abandon this brine production facility, the well will be filled with brine water. The well will be plugged and capped according to plans and specifications recommended by the OCD to meet requirements for protection of groundwater.

All fluid and solids will be removed from the site and transported to an approved disposal well, or tested for contaminants and hauled to an approved disposal site.

Upon removal of all surface equipment, remediation and grading of the facility will be done in a manner reflecting its original condition.

VI. Description of Underground Facility:

Underground facilities are limited to brine well casing and piping constructed as shown on attachment. Drawing schematic labeled Exhibit "D" and described as follows:

DUNAWAY NO. 1

288' 9 5/8" 36 lb. outside casing cemented bottom to surface.

1064' 7" 23 lb. inside casing cemented bottom to surface.

1021' 2 7/8" 6.5 lb. Casing packer set and open ended at bottom.

DUNAWAY NO. 2

284' 9 5/8" 36 lb. outside casing cemented bottom to surface.

1231' 7" 23 lb. inside casing cemented bottom to surface.

1219' 2 7/8" 6.5 lb. Casing packer set and open ended at bottom.

General operation is to pump fresh water down the 2 7/8" tubing of well number 1 and produce brine water up the 2 7/8" tubing of well number 2. Periodically the flow is reversed, pumping the fresh water down the 2 7/8" tubing of well number 2 and producing the brine water up the 2 7/8" tubing of well number 1 to dissolve any particulate buildup in the tubing.

A casing / tubing annulus integrity test is conducted annually on the well. The annulus is pressured up to 300 psi then shut in for 30 minutes with pressure recorded on a pressure chart. The OCD is notified prior to testing to witness the procedure. Brine water transfer piping is pressure tested to $\geq 125\%$ of operating pressure a minimum of once each five years to insure mechanical integrity.

The OCD office will be notified for approval prior to any Drilling, Deepening, or Plug Back Operations using Form C-101, and before remedial work such as altering or pulling casing, plugging, or abandonment by completing OCD Form C-103 "Sundry Notices and Reports on Wells".

VII. Reporting and Clean Up of Spills:

Above ground piping and tanks are visually inspected for leaks by company personnel during each site visit. Upon the discovery of any leaks, spills, or failure of the well/salt cavity or piping integrity tests, the facility will be immediately shut down. Repairs are to be made before operations may be resumed.

Minor Release (5 Bbls. to \leq 25 Bbls.)

For spills greater than 5 Bbls. and less than 25 Bbls. Mesquite SWD, Inc. will file a written notice to New Mexico Oil Conservation Artesia District office at 1301 W. Grand in Artesia, New Mexico 88210 within 15 days of the spill using form C-141.

Major Releases (>25 Bbls.)

For spills greater than 25 Bbls., immediately verbal notification is required to the Artesia OCD District office at telephone number 505/7481283 within 24 hours of discovery of the spill. Written notification is required within 15 days of spill using Form C-141 to the OCD Artesia District Division Environmental Bureau Chief office at P.O. Box 2088, Santa Fe, New Mexico 8750-2088.

VIII. Site Characteristics:

1. The Carlsbad brine facility is located in an area with very little elevation definition. Drainage patterns are shallow and not of the deep arroyo type.

The nearest surface water is located approximately 3,750 feet northeast of this facility. Brine volumes available at the Carlsbad facility are insufficient to reach the watercourse given the rainfall pattern and topography of this area.

2. Ground Water:

Ground water in this area is from the alluvium formation. This water is of poor quality, generally impotable (domestic water needs are served by Otis Water Users Cooperative). Within this area, the water is only used for livestock watering. Depth of this ground water ranges from 50 to 200 feet.

3. Hydrology:

Underground aquifers in this area are alluvium deposits. The ground water in these formations is generally impotable. Livestock and domestic supplies are generally available at depths ranging from 100 to 225 feet. Well logs indicate that rock at the base of the alluvium ranges from 250 to 300 feet.

4. Topography – Flood Potential:

Due to relatively small amount of precipitation in this area and the very shallow drainage patterns, this area is not subject to flooding or dramatic run-off events. See Exhibit "A".

5. Geology:

The Carlsbad brine well is located west of the Pecos River and exhibits soils of the Reagan Series. See attached Exhibit "G" for description of area soil types.

The brine product is from the Salado formation. The series is of upper Permian Age, and extends across the Delaware Basin, Central Basin Platform, thins and pinches out on the eastern shelf. This series is predominately evaporates with successive layers of anhydrite, halite, polyhalite, and to the west, in the Carlsbad area, varying thicknesses of the potash rich sylvanite and langbeinite. Evaporates contain stringers of dolomite, shale, siltstone, and sandstone.

These evaporates were formed during recurrent retreats of shallow seas. The lowermost formation is the Castile and is chiefly anhydrite but contains some halite beds. The Salado overlies the Castile and ranges in thickness from 0 to 2,000 feet. The Rustler formation overlies the Salado, and varies in thickness from 90 to 360 feet, and consists chiefly of anhydrite, but includes red beds (shale) and salt.

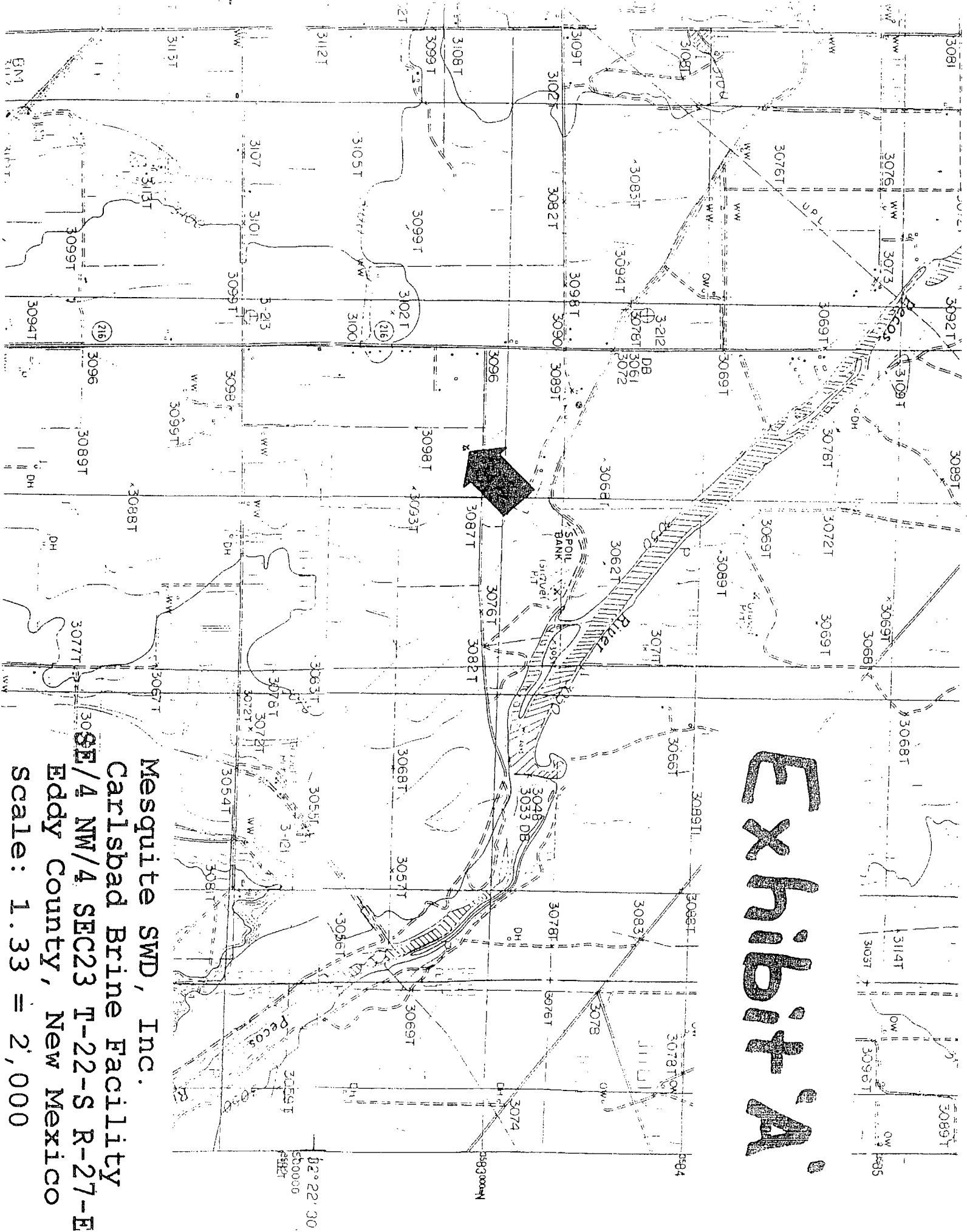
The Quaternary sediments in this area are in the form of alluvial deposits and dune sands. The alluvium was deposited in topographically low areas where the Ogallala formation had been stripped away.

Attachment Index

Exhibit A	Topographic Map
Exhibit B	Facility Plot Plan
Exhibit C	Ownership Map
Exhibit D	Wellbore Schematic
Exhibit E	Schematic of Facility
Exhibit F	Containment Liner Design & Specification
Exhibit G	Soil Types
Exhibit J	Road Location Map

*Note: MIT Test for 2004 will be scheduled at a time approved by the OCD and a copy of reports furnished after completion of testing.

Exhibit A



Mesquite SWD, Inc.
 Carlsbad Brine Facility
 SE/4 NW/4 SEC23 T-22-S R-27-E
 Eddy County, New Mexico
 Scale: 1.33 = 2,000

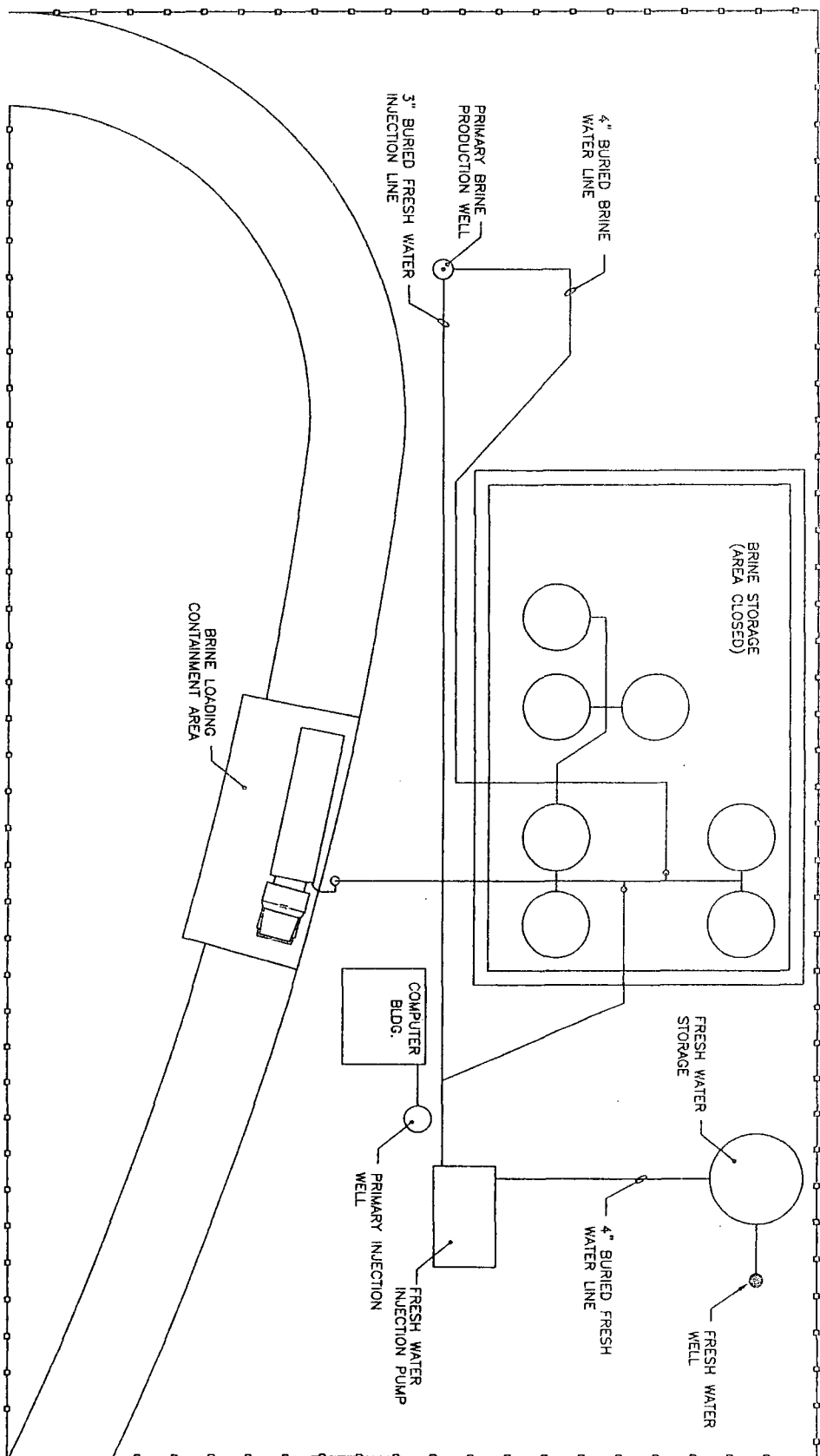
b2-22-30
 500000
 258300000

CARLSBAD BRINE STATION
(PLOT PLAN)

MESQUITE SWD INC.

EXHIBIT 'B'

EDDY COUNTY, NEW MEXICO



COUNTY ROAD TO STATE HWY - 216

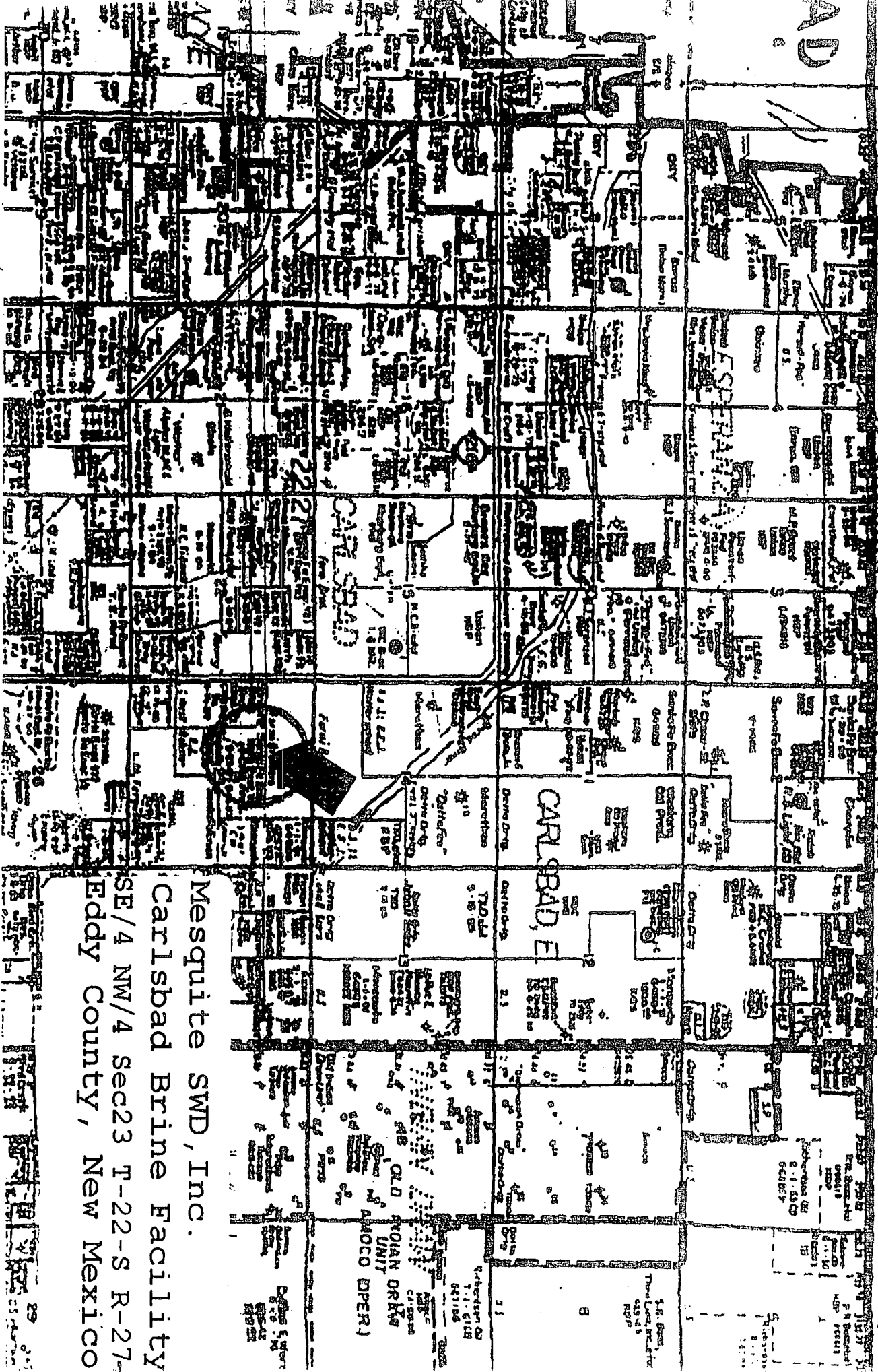
Exhibit C

Adm. Ct.
19 2011

Mesquite SWD, Inc.

Carlsbad Brine Facility

SE/4 NW/4 Sec23 T-22-S R-27
Eddy County, New Mexico

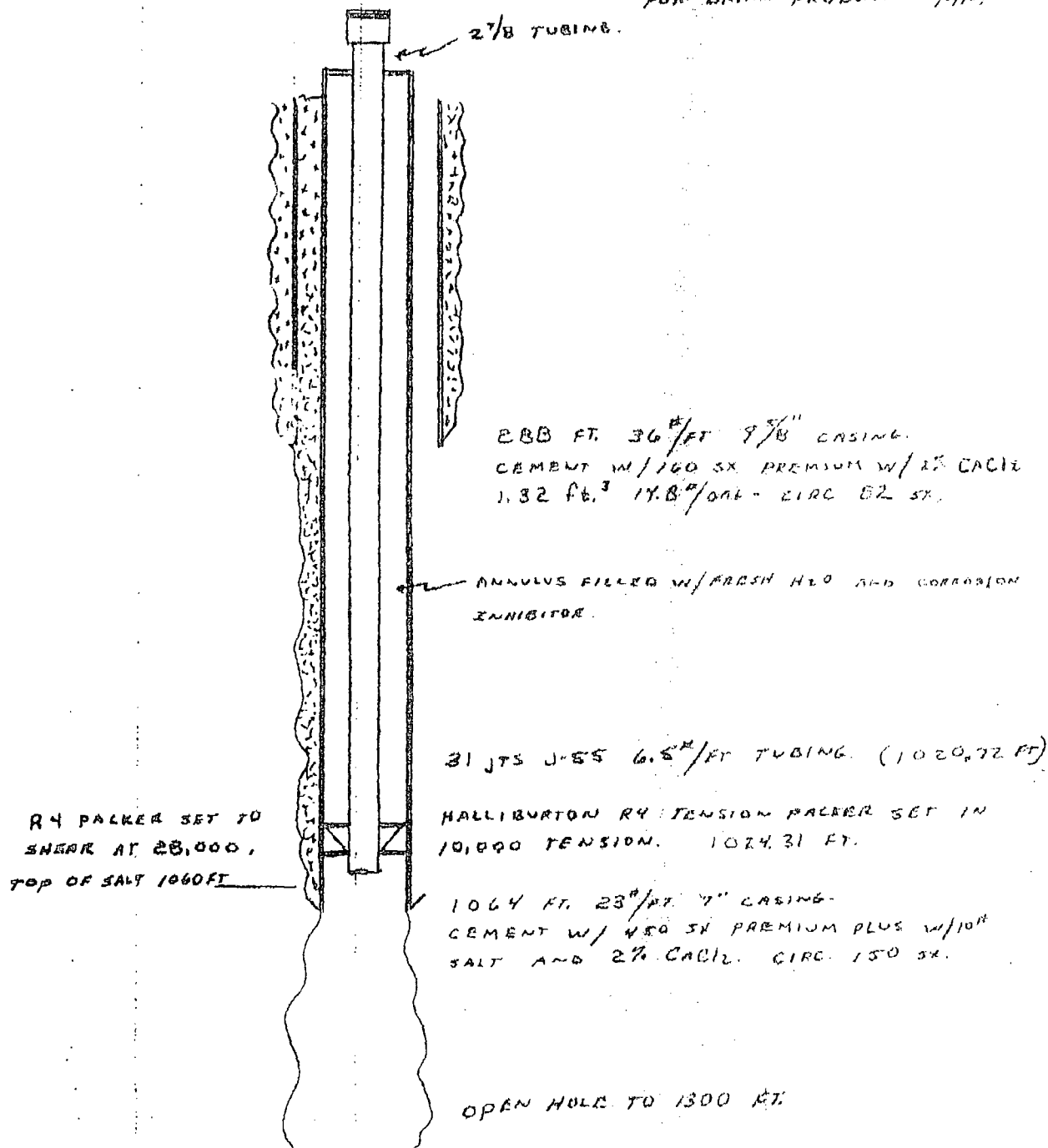


ASHLAND PIPE LINE COMPANY ENGINEERING DEPARTMENT		SHEET
SUBJECT DUNAWAY NO 1 BRINE WELL		AFE 48703Z
1474 FNL AND 2053 FWL SEC 23-22S-27E. EDDY CO		DISTRICT HOOBES N.M.
BY S. ROGERS	CHECKED BY	APPROVED BY
		DATE 16 JAN 1995

0427-B (02/91)

SCURLOCK PERMIAN CORP

SCHEMATIC AS COMPLETED
FOR BRINE PRODUCTION 1-11-95

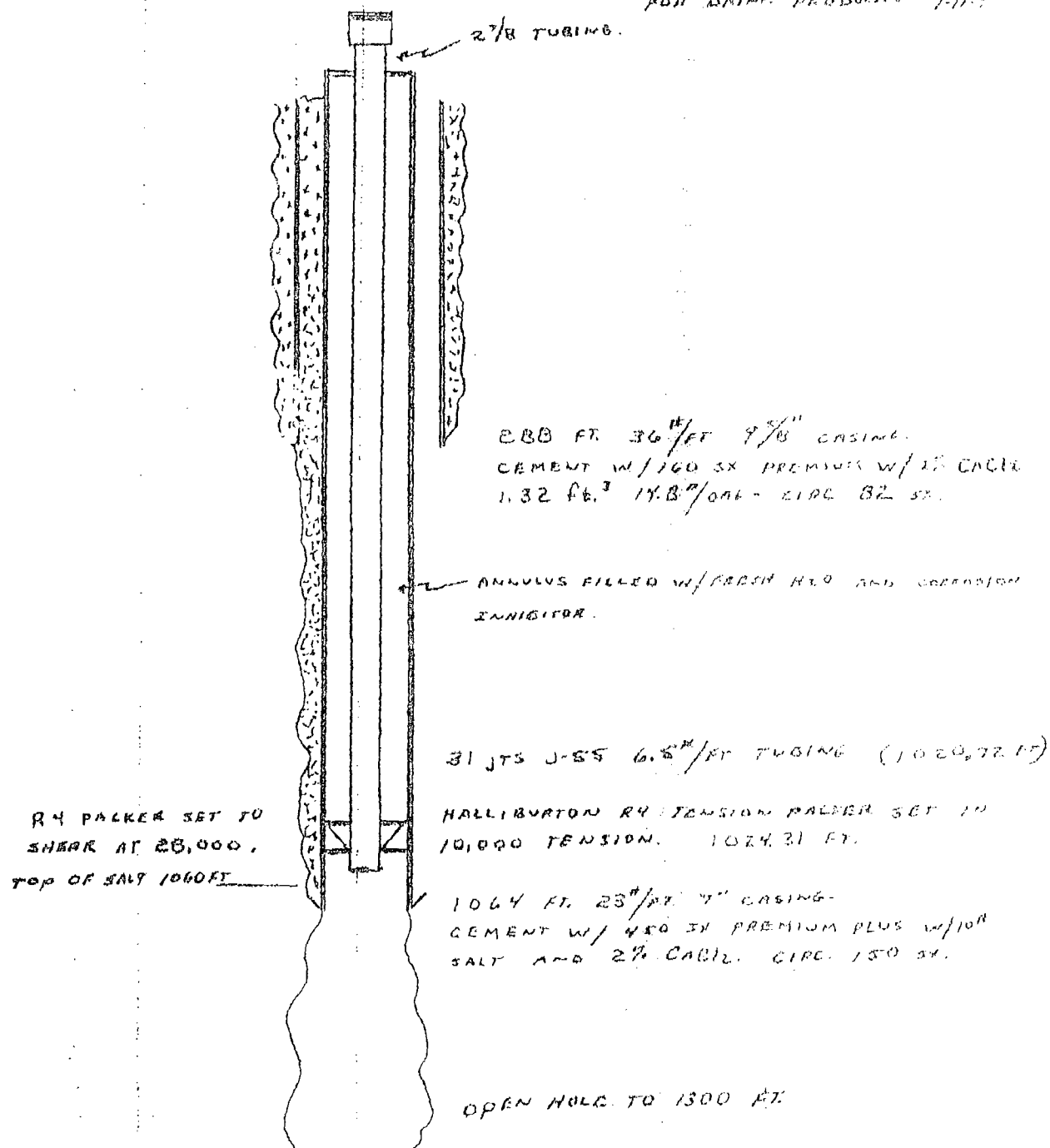


ADHLAND PIPE LINE COMPANY ENGINEERING DEPARTMENT			SHEET
SUBJECT: <u>DINA WAY NO 2 BRINE WELL</u>			AFE <u>487032</u>
<u>1443 FNL 1698 FNL SEC 23-22S-27E. EDDY CO</u>			DISTRICT <u>HOOBES N.M.</u>
BY <u>S. ROGERS</u>	CHECKED BY	APPROVED BY	DRAWING
			DATE <u>16 JAN 1995</u>

0427-B (02/91)

SCURLOCK PERMIAN CORP

SCHEMATIC AS COMPLETED
FOR BRINE PRODUCTION 1-11-95



ARIZONA S.W.D., INC.

LEASE & WELL NO. DUNAWAY No. 2
FORMATION SALADO SALT
COUNTY & STATE COOY Co. NM



6482 Southeast Main
Roswell, NM 88201
Shop: (505) 347-4810
Office: (505) 622-4772

1443' FNL 1698' FNL.
SEC. 23 T22S R27E
ELEVATION: 3094' GR.

95% 26" SA 284' IN 12 1/2" HOLE W/140 SA PREMIUM
CMT W/2 1/2" CaO₂. CIRC 58 SA. OCD WITNESSED.

NOTE: 2 7/8" x 7" ANNULUS P.C. W/ PACKER FLUID

2 7/8" 6.5 # J-55 COATED T36 SET IN HALLIBUTON 12-4
TENSION PKR. SA 1223'

7" 23" SA 1231' IN 8 3/4" HOLE W/475 SA PREMIUM.
CMT W/15 #1/2" SALT & 2 1/2" CaO₂. CIRC 12 SA
TO PIT. OCD WITNESSED.

OFCO 6" HWC TO 1271'

DO NOT DRINK WATER FROM WATER-INTERFUSED WELL.

11/4/21/05

MEASURE THIS TUBE

LEASE & WELL NO. DUNAWAY No. 1
FORMATION SALADO SALT
COUNTY & STATE ECO. Co. NM



6482 Southeast Main
Roswell, NM 88201
Shop: (505) 347-4810
Office: (505) 622-4772

1474' FNL 2053' FNL
SEC 23 T 22S R 24E
ELEVATION: 3091' GR

95/8 30" SA 205' IN 12 1/2" HOLE W/ 160 SY Premium
CMT W/ 2% CaCl₂, CIRC. 83 SY, O.I. WITNESSED.

NOTE: 2 1/2" J-55 TUBING CIRC. W/ REGULAR FLUID

2 7/8 6.5" J-55 TUBG-COATED 50' IN APPROXIMATELY R-4
TENSION P.R. SA 1024'

TOP OF SALT @ 1000'

7" 23# SA 1064' IN 3 3/4" HOLE W/ 450 SY Premium
CMT W/ 10% / 1% SALT & 2% CaCl₂, CIRC 150 SY
TO P.T. OGD WITNESSED.

OPEN 6" HOLE TO 1300'

NOTE: MOUNTAIN THIS IS BLUE PRODUCTION WELL.

4/21/05

Submit 3 Copies
to Appropriate
District Office

State of New Mexico
Geology, Minerals and Natural Resources Department

Form C-103
Revised 1-1-89

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

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

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

WELL API NO.

5. Indicate Type of Lease

STATE ☐

FEED ☐

6. State Oil & Gas Lease No.

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"
(FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well:

OIL
WELL ☐

GAS
WELL ☐

OTHER Brine Well

2. Name of Operator

Scurlock Permian Corp.

3. Address of Operator

7. Lease Name or Unit Agreement Name

Dunaway

8. Well No.

9. Pool name or Wildcat

4. Well Location

Unit Letter F : 1474 Feet From The North Line and 2053 Feet From The West

Section 23

Township 22S

Range 27E

NMPM

Eddy

County

10. Elevation (Show whether DF, RKB, RT, GR, etc.)

3091 GR

11.

Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐

PLUG AND ABANDON ☐

TEMPORARILY ABANDON ☐

CHANGE PLANS ☐

PULL OR ALTER CASING ☐

OTHER ☐

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐

ALTERING CASING ☐

COMMENCE DRILLING OPNS. ☐

PLUG AND ABANDON/RE ☐

CASING TEST AND CEMENT JOB ☐

OTHER: Completion

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

1. Drill 12 1/2" hole and run 288 ft. 36#/ft. 9-5/8" casing. Cement with 160 SX premium w/2%, CaCl2. Yield 1.32 ft.³ 14.8#/gal. circ. 82 SX. OCD witnessed.
2. Drill 8-3/4" hole, run 1064 ft. 7" 23#/ft. casing. Cement w/450 SX premium plus w/10# salt and 2% CaCl2. Circ. 150 SX to pit. OCD witnessed.
3. Open hole to 1300 ft. Run CBL.
4. Run Halliburton R-4 tension packer and 31 jts 2-7/8" 6.5# J-55 tubing. Circulate 2-7/8" x 7" annulus w/packer fluid. Set packer at 1024.31 ft.

SEE ATTACHED DIAGRAM

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE

Steward E. Rogers

TITLE

Operations Coordinator

DATE 1/30/95

TYPE OR PRINT NAME

Steward E. Rogers

713/646-4392
TELEPHONE NO.

(This space for State Use)

APPROVED BY

TITLE

DATE

CONDITIONS OF APPROVAL IF ANY:

MELQUITE SWD, INC.

LEASE & WELL NO. DUNAWAY No. 7
FORMATION SALADO SALT
COUNTY & STATE EDDY CO. N.M.



6482 Southeast Main
Roswell, NM 88201
Shop: (505) 347-4810
Office: (505) 622-4772

1443' FNL 1698' FWL
SEC. 23 T22S R27E
ELEVATION: 3094' ASL

9 5/8" 36# SA 284' IN 12 1/2" HOLE W/ 1470 SY Premium
CMT W/ 2% CaCl₂. CIRC. 58 SY. OGD WITNESSED.

NOTE: 2 7/8" X 7" ANNULUS CIRC. 51' PACKED 1 FWD

2 7/8" 6.5# J-55 COATED TBG SET IN HALLIDAY TO 1223'
TENSION PKR. SF 1223'

7" 23# SA 1231' IN 8 3/4" HOLE W/ 475 SY Premium
CMT W/ 15# / SY SALT & 2% CaCl₂. CIRC 12 SY
TO PIT. OGD WITNESSED.

OPEN 6" HOLE TO 1271'

NOTE: NORMALLY THIS IS FREE WATER INJECTION WELL.

R. H. / J. / PS

Submit 3 Copies
to Appropriate
District Office

State of New Mexico
Geology, Minerals and Natural Resources Dept.

00-0129

Form G-14
Revised 1-

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

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

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

WELL AP NO.

5. Indicate Type of Lease

STATE ☐

6. State Oil & Gas Lease No.

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" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name

Dunaway

1. Type of Well:

OIL
WELL ☐

GAS
WELL ☐

OTHER ☒ Brine

2. Name of Operator

Scurlock Permian Corp.

8. Well No.

2

3. Address of Operator

9. Pool name or Wildcat

4. Well Location

Unit Letter F : 1443 Post From The North Line and 1698 Feet From The West
Section 23 Township 22S Range 27E NMPM Eddy

10. Elevation (Show whether DF, RKB, RT, etc.)
3094 GR.

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐

PLUG AND ABANDON ☐

TEMPORARILY ABANDON ☐

CHANGE PLANS ☐

PULL OR ALTER CASING ☐

OTHER: ☐

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐

COMMENCE DRILLING OPNS. ☐ PLUG AND ABANDON ☐

CASING TEST AND CEMENT JOB ☐ **D**

OTHER: Completion Feb 2 1995

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

1. Drill 12 1/4" hole. Set 284 ft. 36# 9-5/8" casing. Cement 140 SX premium w/2% CaCl2. Yield 1.32 ft.³ 14.8# gal. Circulate 58 SX. OCD witnessed.
2. Drill 8-3/4" hole. Run 1231 ft. 7" 23#/ft. casing. Cement w/475 SX premium w/2% CaCl2 w/15# salt. Circ. 12 SX to pit. OCD witnessed.
3. Open hole to 1271 ft. Run CBL.
4. Run Halliburton R-4 tension packer and 37 jts 2-7/8" 6.5#/ft. J-55 tubing. Circulate 2-7/8 x 7" annulus w/packer fluid. Set packer at 1222.66 ft.

SEE ATTACHED DIAGRAM

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Steward E. Rogers

TITLE Operations Coordinator

DATE 1/30/95

TYPE OR PRINT NAME Steward E. Rogers

713/646-4392

TELEPHONE NO.

(This space for State Use)

ORIGINAL SIGNED BY TIM W. GUM
DISTRICT II SUPERVISOR

APPROVED BY

TITLE

DATE

CONDITIONS OF APPROVAL, IF ANY:

FEB 13 1995

Mesquite SWD Inc.
Carlsbad Brine Facility
Wellbore Schematic

NO. 1 BRINE RECOVERY

NO. 2 FRESH WATER INJ.

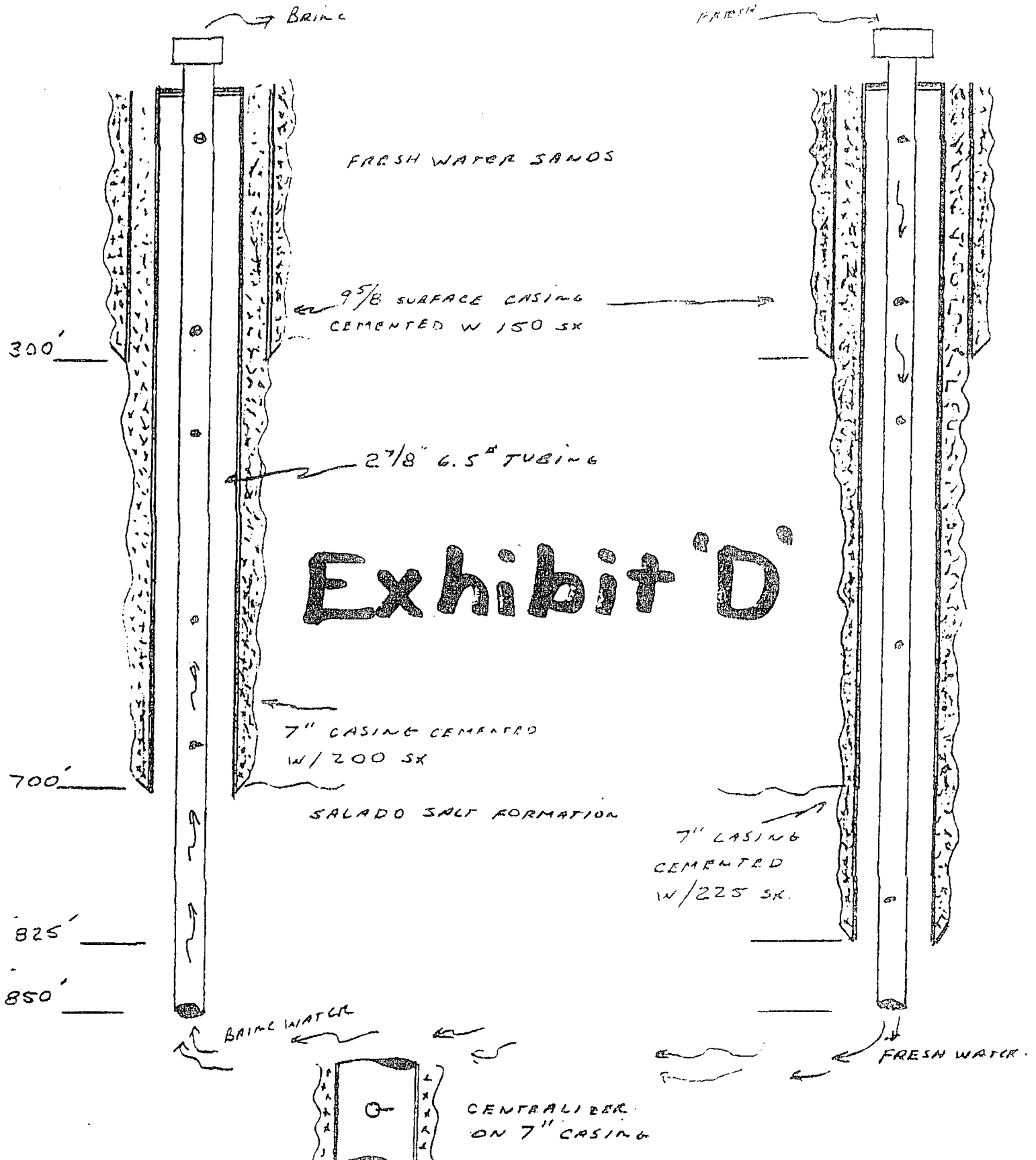
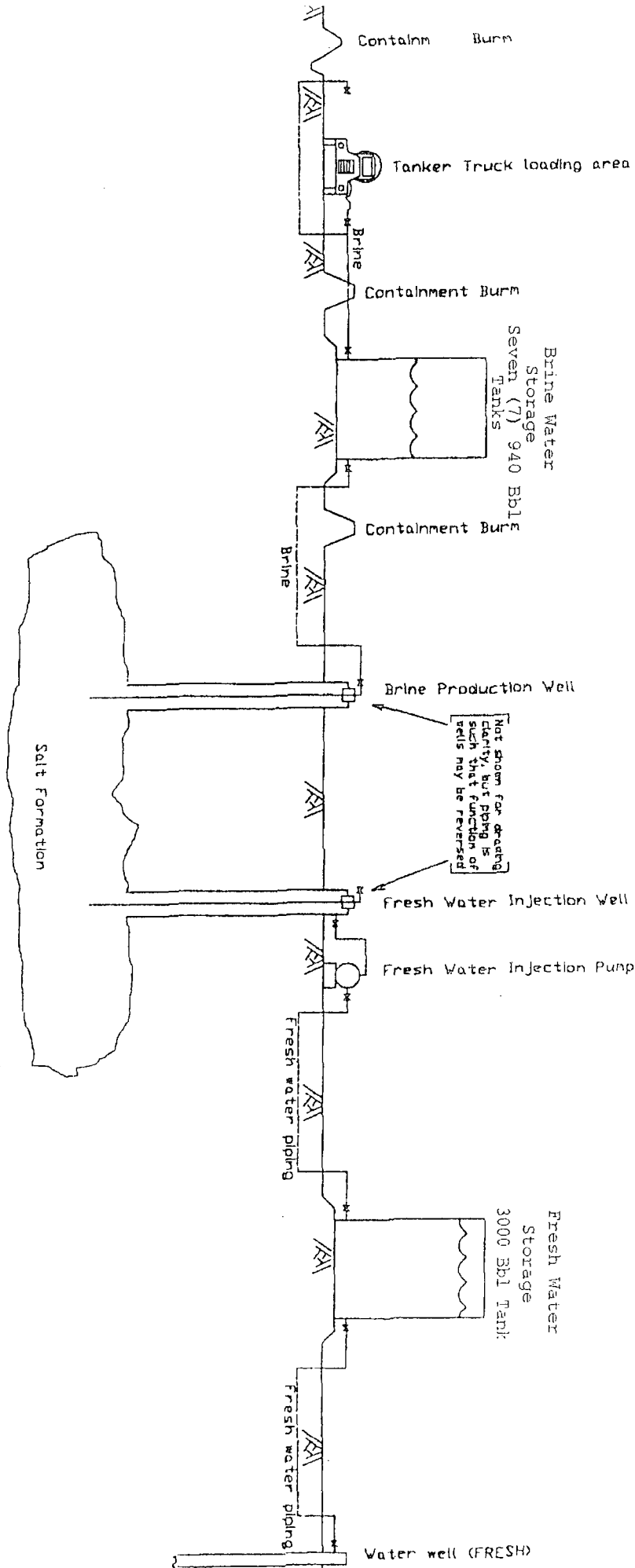


Exhibit E

← FLOW



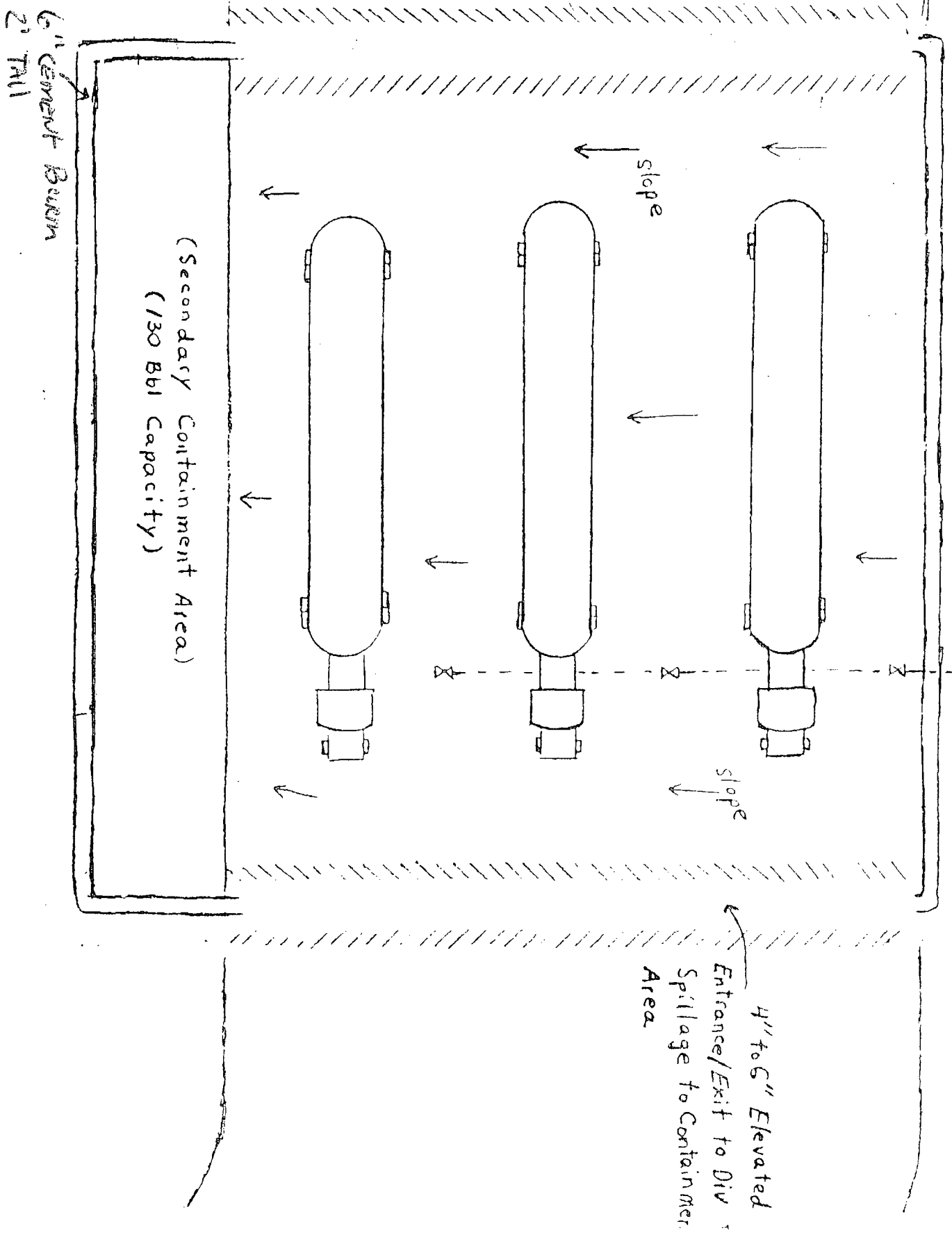
Process Flow Diagram

Mesquite SWD, Inc. - Carlsbad Brine Well/Station

Mesquite SW, LLC. (Plan View)
Carlsbad Brine Station From Brine Storage

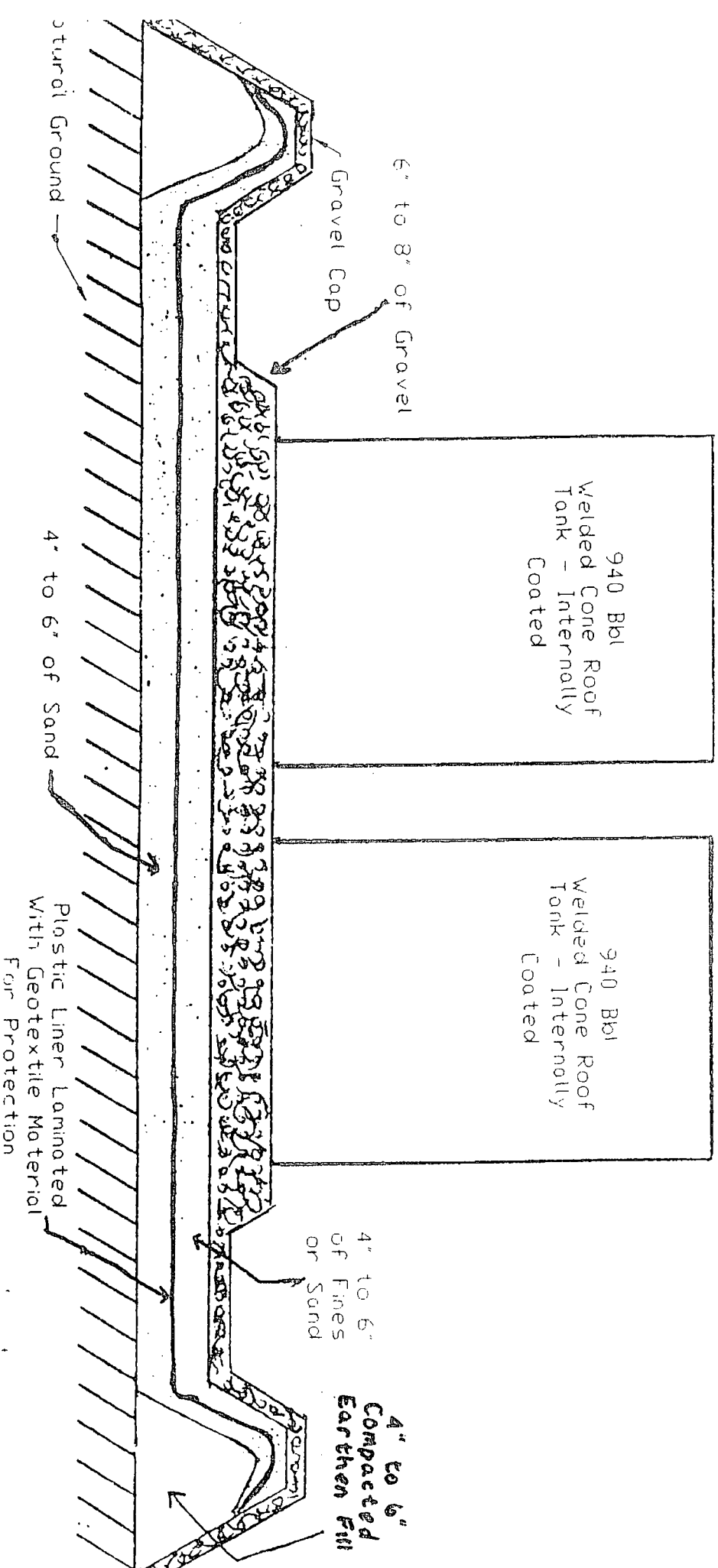
Eddy County
New Mexico

Exhibit F



Mesquite SWD, Inc.			
SCALE		DRAWN BY	
None			
Carlsbad Brine Station			
DATE	APPROVED BY	SHEET	DRAWING NUMBER
		of	

Brine Storage Containment Area Specification Drawing
(Containment Area Sized For 133% Of Tank Storage Capacity)

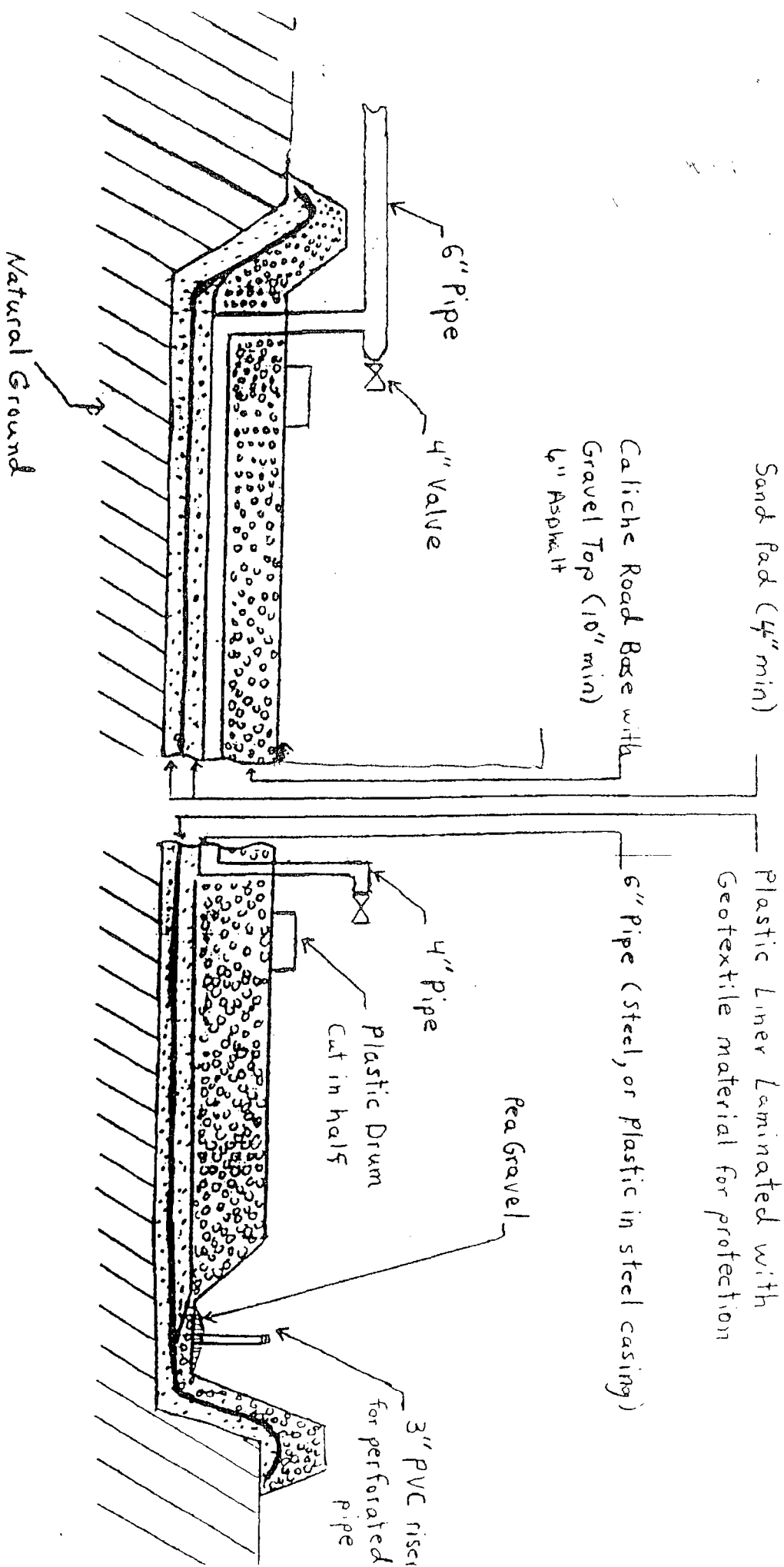


Truck Loading / Containment Area

(Cross Sectional View)

Mesquite SWD, Inc.
Carlsbad Brine Station

Eddy County
New Mexico



CONTAINMENT LINER

SPECIFICATION DATA

PERMALON®

Reef Industries, Inc.
P.O. Box 750245
Houston, TX 77275-0245
Tel: (713) 484-6892
Toll Free: 1-800-231-2417
Fax: (713) 947-2053

I wanted to provide you with some weatherability information on our Permalon Ply X-210. This high density, cross-laminated poly is designed to be UV resistant by a state of the art stabilization system. When exposed to harsh weather conditions, including intense sun, X-210 should last in excess of five years. When buried, this material should last indefinitely. X-210 is chemically inert, non-leachable, and is resistant to root penetration, rodents and microbes (it is not a food source). Additionally, it meets ASTM D-3083 (Soil Burial). Ply X-210 is not prone to stress-cracking (ESC), thus, making a very good moisture and Radon barrier.

I hope this information will serve useful to you and please do not hesitate to call if you should have any questions.

Respectfully,

David Dewsnap
Chemist
Reef Industries, Inc.





Reed Industries, Inc.
"Since 1957"

Product Development Group
11/18/1993

Physical Properties of Geomembrane / Geotextile Composite

Material/Property	X1GPET45	X2GPET45
Basis Weight oz/yd ² ASTM D-3776	9.83	15.1
Thickness (mils/mm) ASTM D-2103	31/0.88	39/0.99
Tensile Strength (lb _r) ASTM D - 882 - 3 in. (MD/TD)	190/159	263/222
Tensile Elongation (%) ASTM D - 882 - 3 in. (MD/TD)	63/83	46/54
Grab Tensile Strength (lb _r) ASTM D - 4632 (MD/TD)	194/168	303/250
Grab Elongation (%) ASTM D - 4632 (MD/TD)	70/110	"
Trapezoid Tear Strength (lb _p) ASTM D - 4533 (MD/TD)	91/80	132/135
Puncture Resistance (lb _p) ASTM D - 4833	85	100
Puncture Elongation (in) ASTM D - 4833	0.66	0.63
Mullen Burst (lb _p) ASTM D - 3786	237	333
Puncture Prop. & Tear (lb _r) ASTM D - 2582 (MD/TD)	-	55/57
Dart Impact Strength (lb _m) ASTM D-1709	6.5	9.9

ASTM D - 882 : Tensile strength of thin plastic sheeting (less than 40 mils)
ASTM D - 4632: Breaking Load and Elongation of Geotextiles.

N.B. These are typical values and not be interpreted as specifications. (Average Roll Values will be presented on availability of sufficient data)

P.O. Box 750250 • Houston, Texas 77275-0250
Tel: (713) 943-0070 • U.S.A. Toll Free: 1-800-231-6074 • Canada Toll Free: 1-800-847-5616
Fax: (713) 943-8085

PERMALON®

Reef Industries, Inc.
P.O. Box 750245
Houston, TX 77275-0245
Tel: (713) 484-6892
Toll Free: 1-800-231-2417
Fax: (713) 947-2053

PERMALON® PLY X-210 SPECIFICATIONS

Permalon Ply X-210 is a four layer composite laminate of three layer co-extruded polyolefin film. The material is composed of twelve distinct layers and is oriented in the machine direction, the transverse direction and at a 45 degree angle to both. The polymer is compounded with copolymer impact modifiers and copolymers to improve the impact resistance along with typical properties.

Burial Properties

Physical Property	Initial Result	Post Burial Result	% Change
3" Tensile	128 pounds	126 pounds	-1.5%
3" Elongation	714%	730%	+2.2%
100% Modulus	86 pounds	87 pounds	+1.2%

The differences in the test results fall within the expected machine error for these test methods.

Permeability

The water vapor transmission specifications for the Ply X-210 are as follows:

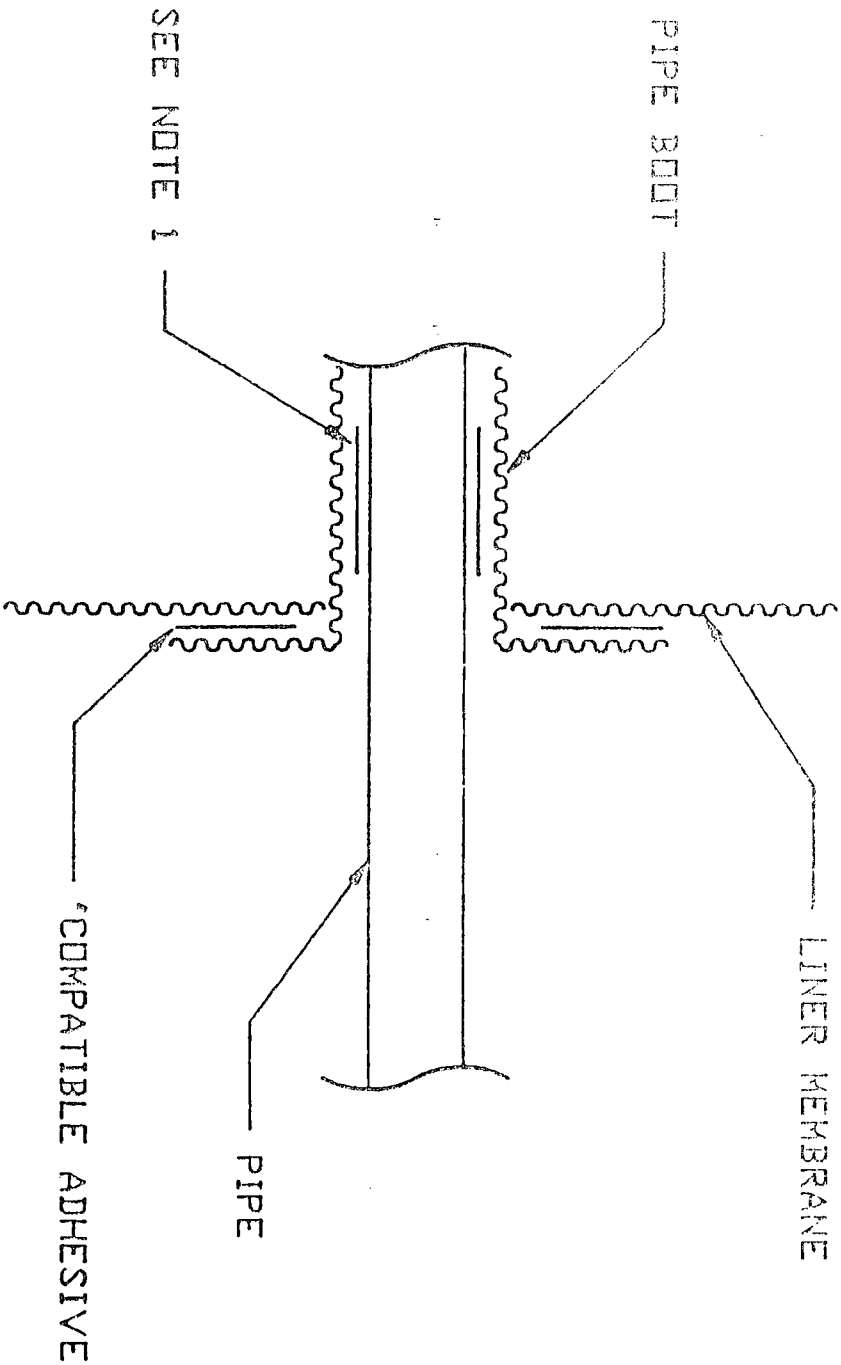
Property	ASTM Method	Units	Value
WVTR	E-96	perms	0.046
WVTR	E-96	cm/s	8.9 E -10





REEF
INDUSTRIES INC

PIPE INTRUSION THROUGH PERMALON LINER MEMBRANE



SPECIAL INSTRUCTIONS:

- 1) AFFIX PIPE BOOT TO PIPE USING ADHESIVE OR CLAMPS.
- 2) PLACE PIPE AND BOOT THROUGH LINER MEMBRANE.
- 3) AFFIX LINER MEMBRANE TO PIPE BOOT WITH ADHESIVE.
- 4) NOTE: PIPE BOOTS WILL BE FURNISHED BY MANUFACTURE
WHEN EXACT PIPE DIAMETER IS DETERMINED BY CONTRACTOR.

R27E

(Joins sheet 18)



(Joins sheet 21)

(Joins sheet 22)

The Harkey series consists of deep, well-drained, strongly calcareous, moderately dark colored soils that developed in mixed alluvium. These soils occur on low terraces on flood plains of major streams. They are naturally free of salts, except in areas adjacent to Lake McMillan and the Pecos River. In these areas the water table is at a depth of less than 5 feet part of the year.

In cultivated areas, soils of the Harkey series typically have a surface layer of brown very fine sandy loam 9 inches thick. In uncultivated areas, this layer is slightly lighter colored and contains less organic matter. The next layer, to a depth of more than 50 inches, is brown loam or very fine sandy loam.

These soils are uneroded or only slightly eroded. They are moderately fertile and have a low content of organic matter. Permeability is moderate, and the water-holding capacity is high. Rainfall amounts to 10 to 14 inches annually, and the mean annual temperature is 60° to 64° F. The frost-free season is 210 to 220 days. Elevations range from 3,000 to 3,400 feet.

Harkey soils are used for irrigated crops, native pasture, and wildlife habitat. The vegetation consists mainly of black grama, blue grama, tobosa, and vine-mesquite.

In areas affected by salts and that have a fluctuating water table, the vegetation is mainly alkali sacaton, inland saltgrass, four-wing saltbush, and saltcedar.

Typical profile of Harkey very fine sandy loam, 150 feet northeast of the SW. corner of NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 24, T. 22 S., R. 27 E.

Ap—0 to 9 inches, brown (10YR 5/3) very fine sandy loam, dark brown (10YR 3/3) when moist; massive; slightly hard when dry, very friable when moist; nonsticky and nonplastic when wet; strongly calcareous; mildly alkaline; abrupt, wavy boundary.

AC—9 to 14 inches, light brown (7.5YR 6/4) very fine sandy loam, brown (7.5YR 4/4) when moist; very weak, coarse, prismatic structure to massive; slightly hard when dry, very friable when moist, nonsticky when wet; few, fine, prominent seams of lime; few fine crystals of gypsum or salts, these most abundant in plowpan; strongly calcareous; mildly alkaline; clear, smooth boundary.

C1—14 to 30 inches, brown (7.5YR 5/4) very fine sandy loam, dark brown (7.5YR 4/4) when moist; very coarse, prismatic structure; soft when dry, very friable when moist, nonsticky when wet; few, fine, prominent seams of lime; few fine crystals of gypsum or salts; strongly calcareous; mildly alkaline; abrupt, wavy boundary.

C2—30 to 37 inches, brown (7.5YR 5/4) loam, dark brown (7.5YR 4/4) when moist; massive; slightly hard when dry, friable when moist, nonsticky when wet; few, fine to medium, distinct mottles of lime; strongly calcareous; mildly alkaline; clear, smooth boundary.

C3—37 to 51 inches, brown (7.5YR 5/4) loam, dark brown (7.5YR 4/4) when moist; massive; soft when dry, very friable when moist, nonsticky when wet; strongly calcareous; gradual, smooth boundary.

C4—51 to 82 inches, brown (7.5YR 5/4) silt loam, dark brown (7.5YR 4/4) when moist; massive; slightly hard when dry, friable when moist; strongly calcareous; moderately alkaline.

The thickness of the Ap horizon ranges from 7 to 10 inches. The color ranges from 10YR to 7.5YR in hue, from 5 to 6 in value, and from 3 to 6 in chroma. The texture includes very fine sandy loam, loam, and sandy loam. The thickness of the AC horizon ranges from 5 to 13 inches. The color is lighter than that of the surface horizon. The texture is dominantly loam to light clay loam but includes very fine sandy loam. In places there are strata, generally less than 6 inches thick, of material ranging from sandy loam to light sandy clay loam. A few coarse fragments occur in some profiles.

Harkey soils are associated with Anthony and Arno soils and with the gray variant of Pima soils.

Harkey sandy loam, 0 to 1 percent slopes (Ho).—Except for the texture of the surface layer, this soil has a profile similar to that described as typical of the series. It occurs on low terraces along the Pecos River, mainly in the Carlsbad area. Included in mapping were areas of Anthony sandy loam, 0 to 1 percent slopes, which make up less than 5 percent of the acreage, and a small area of Harkey sandy loam, 1 to 3 percent slopes.

This soil is less productive than Harkey very fine sandy loam, 0 to 1 percent slopes. It is subject to moderate wind and water erosion, and careful management of both soil and irrigation water is needed. The water-holding capacity is moderate in the surface layer, but it is high in the subsoil and substratum. The water-intake rate is moderately rapid.

This soil is used for irrigated crops, native pasture, and wildlife habitat. (Irrigated capability unit IIc-1; dryland capability unit VIIc-2; Sandy range site)

Harkey very fine sandy loam, 0 to 1 percent slopes (Hk).—This soil has the profile described as typical of the series. It occurs on low terraces of the Pecos, Pecos, and Black Rivers. Included in mapping were areas of Anthony and Arno soils and of Pima clay loam, gray variant, 0 to 1 percent slopes. The included areas make up less than 5 percent of the acreage.

This soil is used for irrigated crops, native pasture, and wildlife habitat. It is suited to all the crops grown in the Area. (Irrigated capability unit IIc-2; dryland capability unit VIc-4; Loamy range site)

Reagan Series

The Reagan series consists of deep, well-drained, moderately dark colored, calcareous loams that developed in old alluvium derived from calcareous, sedimentary rocks of the uplands. These soils occur on plains west of the Pecos River. They are nearly level to gently sloping.

Soils of the Reagan series typically have a surface layer of brown loam about 8 inches thick. Light-brown loam and heavy loam, about 24 inches thick, underlies the surface layer. The next layers, which extend to a depth of more than 60 inches, are enriched with calcium carbonate.

These soils are uneroded or only slightly eroded. They are moderately fertile. Runoff is slow. Permeability is moderate, and the water-holding capacity is high. The organic-matter content is low. In most places roots are not restricted, but in some places caliche or gypsum occurs below a depth of 4 feet. Rainfall amounts to 10 to 14 inches annually, and the mean annual temperature is 60° to 64° F. The frost-free season is 200 to 220 days. Elevations range from 3,000 to 4,400 feet.

Reagan soils are used for irrigated crops, native pasture, and wildlife habitat. These are among the most productive irrigated soils in the Area. The vegetation consists mainly of black grama, blue grama, side-oats grama, vine-mesquite, tobosa, burrograss, broom snake-weed, and mesquite.

Typical profile of Reagan loam, NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 27, T. 22 S., R. 27 E.

Ap—0 to 8 inches, brown (10YR 5/3) loam, dark brown (10YR 4/3) when moist; massive; slightly hard when dry, friable when moist, slightly sticky when wet; abundant very fine and fine roots; many very fine and fine pores; strongly calcareous; mildly alkaline; abrupt, smooth boundary.

C1—8 to 19 inches, light-brown (7.5YR 6/3) loam, dark brown (7.5YR 4/3) when moist; weak, fine, sub-angular blocky structure; slightly hard when dry, friable when moist, slightly sticky when wet; abundant very fine and fine roots; many very fine and fine pores; few, fine, prominent seams of lime;

strongly calcareous; mildly alkaline; gradual boundary.

C2—19 to 32 inches, light-brown (7.5YR 6/3) heavy loam, brown (7.5YR 4/4) when moist; weak, fine, sub-angular blocky structure; slightly hard when dry, friable when moist, slightly sticky when wet; plentiful very fine and fine roots; common very fine and fine pores; few, medium, prominent, soft concretions of lime; very strongly calcareous; mildly alkaline; gradual boundary.

C3ca—32 to 44 inches, light-brown (7.5YR 6/3) light clay loam, brown (7.5YR 5/4) when moist; massive; hard when dry, friable when moist, slightly sticky when wet; plentiful very fine and fine roots; common very fine and fine pores; many, medium, faint mottlings of lime; very strongly calcareous; moderately alkaline; clear boundary.

C4ca—44 to 64 inches, light-brown (7.5YR 6/3) light clay loam, brown (7.5YR 5/4) when moist; massive; slightly hard when dry, friable when moist, slightly sticky when wet; few very fine and fine roots; common very fine and fine pores; distinct mottlings of lime; very strongly calcareous; moderately alkaline; clear boundary.

C5ca—64 to 67 inches, light-brown (7.5YR 6/3) light clay loam, brown (7.5YR 5/4) when moist; massive; slightly hard when dry, friable when moist, slightly sticky when wet; few very fine and fine roots; common very fine and fine pores; distinct mottlings of lime; very strongly calcareous; moderately alkaline; gradual boundary.

C6—67 to 82 inches, light-brown (7.5YR 6/3) heavy loam, brown (7.5YR 4/4) when moist; weak, fine, sub-angular blocky structure; slightly hard when dry, friable when moist, slightly sticky when wet; common very fine and fine pores; very strongly calcareous; moderately alkaline.

The thickness of the A horizon ranges from 6 to 12 inches. The color ranges from 10YR to 7.5YR in hue, from 5 to 8 in value, and from 2 to 3 in chroma. The texture is loam, silt loam, or light clay loam. The C1 horizon is as much as 13 inches thick, but it does not occur in all profiles. The color is as much as one unit higher in value and chroma. The texture is loam or light clay loam. The C2 horizon is as much as 14 inches thick, but it does not occur in all profiles. The color and texture are similar to those of the C1 horizon. The Cca horizon extends to a depth of 40 to 60 inches or more below the surface. The color ranges from 10YR to 7.5YR in hue, from 6 to 7 in value, and from 3 to 4 in chroma. The texture ranges from loam to light clay loam. Gypsiferous earths or soft caliche occurs below a depth of 48 inches in some places.

Reagan soils are associated with Upton, Atoka, and Pima soils.

Reagan loam, 0 to 1 percent slopes (Rc).—This soil has the profile described as typical of the series. It occurs on plains west of the Pecos River in the irrigated areas near Artesia and Carlsbad. Included in mapping were small areas of Reagan loam, saline, 0 to 1 percent slopes, where water from canals seeps into the gypsiferous substratum. Also included were small areas of Upton gravelly loam, 0 to 3 percent slopes, which occur on ridges. The included areas make up less than 5 percent of the acreage.

This soil is susceptible to wind erosion, especially when the seedbed is being prepared and the soil is bare. Seedling damage caused by high winds is common.

This soil is used mainly for irrigated crops and wildlife habitat. It is among the most productive of the irrigated soils, and in most places it has been bench leveled to grades of 0.2 to 0.8 percent. Cotton (fig. 15) and most other crops grown in the Area are suitable. Pecan trees need more than 48 inches of unrestricted rooting zone, and, although the effective rooting zone

extends beyond this depth in most places, care should be taken to select areas of deep soils for pecans. A small acreage of this soil is used for native pasture. (Irrigated capability unit IIs-2; dryland capability unit VIs-4; Loamy range site)

The Upton series consists of moderately dark colored, calcareous, gravelly soils that developed in old alluvium derived from calcareous sedimentary rocks. These soils are very shallow to shallow over caliche and cemented gravel. They occur on upland plains between the Pecos River and the mountains and hills of the western part of the survey Area. They are nearly level to sloping.

Soils of the Upton series typically have a surface layer of grayish-brown gravelly loam about 3 inches thick. The next layer, about 6 inches thick, is brown gravelly loam. Fractured, platy, indurated caliche is at a depth of about 9 inches.

These soils are uneroded or only slightly eroded. Run-off is slow to medium. Permeability is moderate. The water-holding capacity is low to very low, and the soils are droughty. Rainfall amounts to 10 to 14 inches annually, and the mean annual temperature is 60° to 64° F. The frost-free season is 200 to 217 days. Elevations range from 8,000 to 4,400 feet.

Upton soils are used principally for native pasture and wildlife habitat. A small acreage is used for irrigated crops. The vegetation consists mainly of black grama, side-oats grama, blue grama, hairy grama, creosotebush, tarbush, burrograss, broom snakeweed, and mesquite. Good management is needed to maintain a cover of desirable forage and to control erosion. Revegetation is difficult because temperatures are high and rainfall is undependable. Surface water is lacking.

Typical profile of Upton gravelly loam, 2,160 feet east and 1,650 feet south of the NW. corner of sec. 15, T. 24 S., R. 26 E.

A1—0 to 8 inches, grayish-brown (10YR 5/2) gravelly loam, dark grayish brown (10YR 4/2) when moist; weak, medium, granular structure; slightly hard when dry, friable when moist, slightly sticky and slightly plastic when wet; common very fine and fine pores; strongly calcareous; mildly alkaline; abrupt, wavy boundary.

C1—3 to 9 inches, brown (10YR 5/3) gravelly loam, dark brown to brown (10YR 4/3) when moist; massive; slightly hard when dry, friable when moist, slightly sticky and slightly plastic when wet; common very fine and fine pores; strongly calcareous; mildly alkaline; abrupt boundary.

C2cam—9 inches, fractured, platy, indurated caliche and cemented gravel; upper part of the horizon is laminar.

The A1 horizon ranges from 1 to 4 inches in thickness. The color ranges from 10YR to 7.5YR in hue, from 5 to 7 in value, and from 2 to 6 in chroma. The C1 horizon ranges

from 1 to 9 inches in thickness. The color ranges from 10YR to 7.5YR in hue, from 5 to 6 in value, and from 3 to 4 in chroma. The depth to caliche ranges from 2 to 20 inches.

Upton soils are associated with Atoka, Reagan, and Simona soils.

Upton gravelly loam, 0 to 9 percent slopes (UG, Uo).— This soil has the profile (fig. 17) described as typical of the series. It occurs as whalebacks, or elongated areas with rounded crests. The areas are west of the Pecos River on broad plains and in valleys, and east and west of the River, from Carlsbad southward to the Texas State line. Included in mapping were small areas of Upton soils 0 to 1 percent slopes; Upton soils, 1 to 3 percent slopes; Atoka loam, 0 to 1 percent slopes; Atoka loam, 1 to 3 percent slopes; and Reagan loam, 0 to 1 percent slopes. The included areas make up less than 15 percent of the acreage.

Some of the acreage was mapped at high intensity, and some at low intensity. Most of the acreage is in the low-intensity survey. The principal difference between the soils mapped at the two intensities is the size of the individual areas and the kinds of included soils. In the low-intensity survey, the areas are generally large; some are as much as several hundred acres in size. In the high-intensity survey, most areas are 5 to 50 acres in size. The included areas of Atoka loam and Reagan loam are more extensive in the low-intensity survey.

This soil is used for native pasture. Roots are restricted by shallowness over hard caliche. Fertility is low. (Dry-land capability unit VII-1; Shallow range site)

Atoka loam, 0 to 1 percent slopes (A₀).—This soil has the profile described as typical of the Atoka series. It occurs in broad swales on the plains west of the Pecos River near Artesia and Carlsbad. Included in mapping were areas of Reagan and Upton soils, which make up less than 5 percent of the acreage. Also included were areas of Atoka fine sandy loam.

This soil is used for irrigated crops and native pasture. It is fertile, but the underlying caliche and the moderate water-holding capacity limit the growth of deep-rooted crops. It can be used for shallow-rooted crops (Irrigated capability unit III_s-14; dryland capability unit VI_s-3; Loamy range site)

Atoka Ser

The Atoka series consists of well-drained, moderately dark colored, level to gently sloping soils that developed in moderately deep old alluvium derived from calcareous sedimentary rocks. These soils (fig. 10) occur on uplands along the Pecos River in the general area of Artesia and Carlsbad. They are loamy and calcareous.

Soils of the Atoka series typically have a surface layer of grayish-brown to brown loam about 8 inches thick. The next layer, about 15 inches thick, consists of brown

to dark-brown loam. A layer, about 10 inches thick, that is enriched with calcium carbonate rests on fractured, indurated caliche at a depth below 33 inches.

These soils are uneroded or only slightly eroded. The natural fertility is moderate, and the organic-matter content is low. Permeability is moderate, and the water-holding capacity is moderate. Rainfall amounts to 10 to 14 inches annually, and the mean annual temperature ranges from 60° to 64° F. The frost-free season is 210 to 220 days. Elevations range from 3,050 to 4,300 feet.

Atoka soils are used for irrigated crops and native pasture. The vegetation consists of black grama, blue grama, tobosa, side-oats grama, bush muhly, and vine-mesquite.

Typical profile of Atoka loam, 0 to 1 percent slopes, NE $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 4, T. 23 S., R. 27 E.

A11—0 to 2 inches, grayish-brown (10YR 5/2) very fine sandy loam, dark brown (10YR 3/2) when moist; moderate, thin and very thin, platy structure; soft when dry, friable when moist, nonsticky when wet; common very fine and fine pores; abundant fine and medium roots; strongly calcareous; mildly alkaline; abrupt, smooth boundary.

A12—2 to 8 inches, brown (10YR 5/3) loam, dark brown (10YR 4/2) when moist; weak, coarse, subangular blocky structure; hard when dry, friable when moist; slightly sticky when wet; abundant worm casts; common very fine and fine pores; abundant fine and medium roots; strongly calcareous; mildly alkaline; gradual, smooth boundary.

AC—8 to 15 inches, brown (10YR 5/3) loam, dark brown (10YR 4/2) when moist; weak, coarse, subangular blocky structure; slightly hard when dry, friable when moist, slightly sticky when wet; abundant worm casts; common very fine and fine pores; plentiful very fine and fine roots; few seams of lime; strongly calcareous; mildly alkaline; gradual, smooth boundary.

C1—15 to 23 inches, dark brown (10YR 4/3) loam, dark brown (7.5YR 4/4) when moist; very weak, coarse, subangular blocky structure; slightly hard when dry, friable when moist, slightly sticky when wet; abundant worm casts; common very fine and fine pores; plentiful very fine and fine roots; few seams of lime; strongly calcareous; mildly alkaline; clear, smooth boundary.

C2ca—23 to 33 inches, light yellowish-brown (10YR 6/4) loam, yellowish brown (10YR 5/4) when moist; very weak, coarse, subangular blocky structure; slightly hard when dry, friable when moist, slightly sticky when wet; common, fine to medium, white (10YR 8/2) lime concretions, very pale brown (10YR 8/3) when moist; common very fine and fine pores; few very fine roots; strongly calcareous; mildly alkaline; abrupt, wavy boundary.

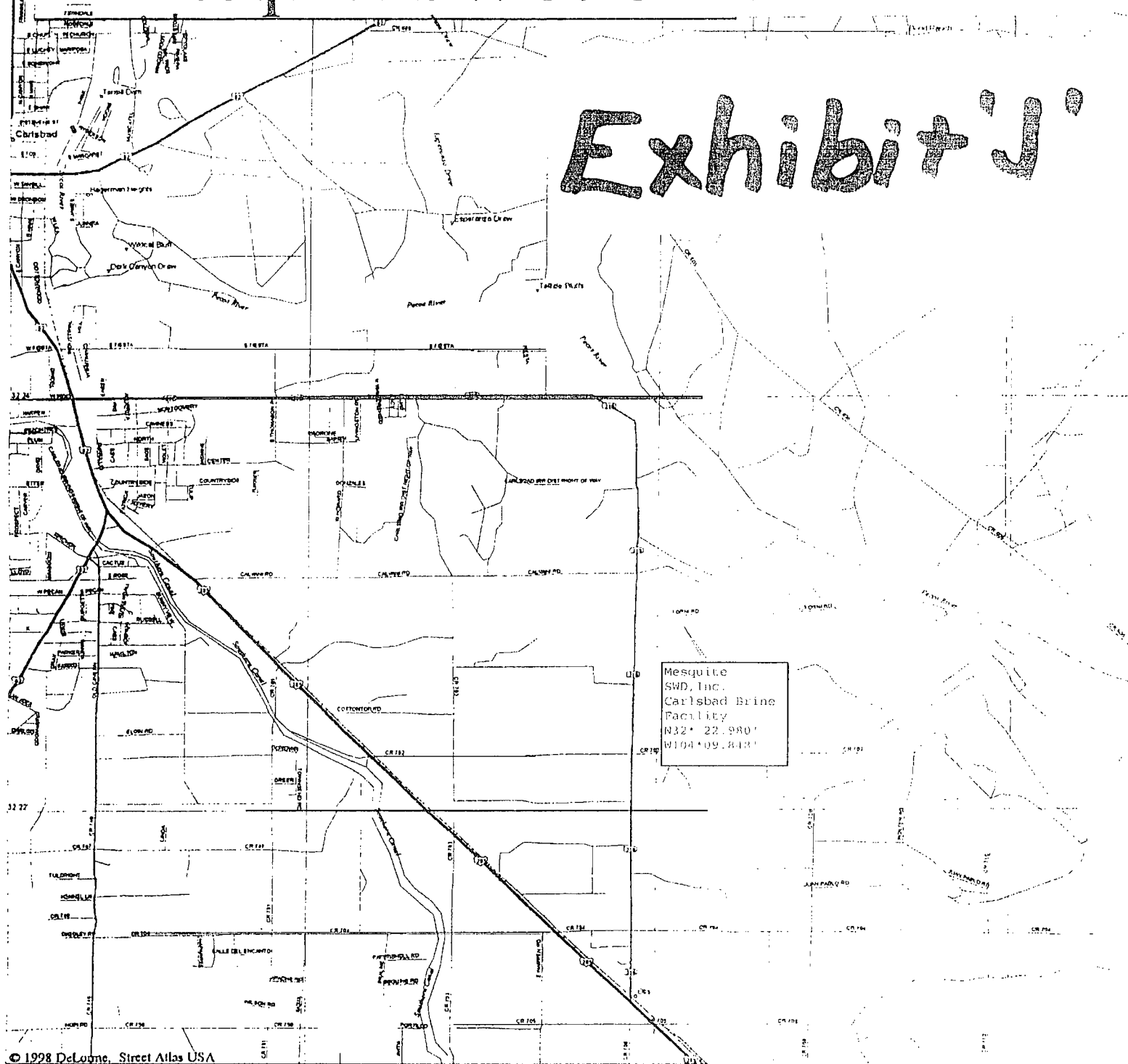
C2cem—33 inches, fractured, indurated, gravelly caliche.

The A horizon ranges from 4 to 8 inches in thickness. Its texture is very fine sandy loam, loam, or fine sandy loam. The color of the A horizon ranges from 10YR to 7.5YR in hue, from 5 to 6 in value, and from 2 to 3 in chroma. The C2ca horizon ranges from 9 to 23 inches in thickness. Its texture is generally loam to light clay loam, but in places it is silty clay loam. The depth to indurated caliche or strongly cemented gravel ranges from 20 to 36 inches.

Atoka soils are associated with soils of the Upton and Reagan series.

Mesquite SWD/Carlsbad Brine

Exhibit 'J'



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Mag 14.00

Tue Aug 31 14:35 1999

Scale 1:50,000 (at center)

5000 Feet

1000 Meters

- | | |
|-------------------|--------------------|
| Local Road | Geographic Feature |
| Walkway/Stairway | Locale |
| US Highway | City |
| Major Connector | Land |
| State Route | Water |
| Utility/Pipe | River/Canal |
| Railroad | Intermittent River |
| Point of Interest | |