



W.R. HUMPHRIES  
COMMISSIONER

State of New Mexico



Commissioner of Public Lands

October 12, 1989

BEFORE EXAMINER STATE

Oil Conservation Division

EXHIBIT NO. C

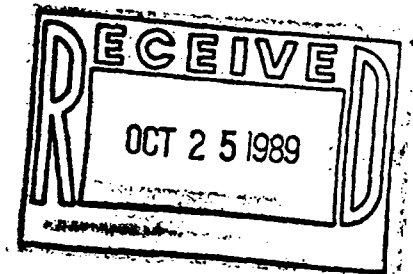
Case No. 9825+9826

P.O. BOX 1148  
SANTA FE, NEW MEXICO 87504-1148

Sage Energy Company  
10101 Reunion Place, Suite 800  
San Antonio, TX 78216-4158

ATTN: Mr. Lee Patrick

RE: Proposed West Tres Papalotes Unit  
Lea County, New Mexico



Gentlemen:

This office has reviewed the unexecuted copy of the unit agreement submitted for the proposed West Tres Papalotes Unit Area, Lea County, New Mexico. This agreement meets the general requirements of the Commissioner of Public Lands who has this date granted you preliminary approval as to form and content.

Preliminary approval shall not be construed to mean final approval of this agreement in any way and will not extend any short term leases until final approval and an effective date have been given.

When submitting your agreement for final approval, please include the following items:

1. Application for final approval by the Commissioner setting forth the tracts that have been committed and those that are not committed.
2. All ratifications from the Lessees of Record and Working Interest Owners. All signatures should be acknowledged by a notary and one set must contain original signatures.
3. Order of the New Mexico Oil Conservation Division. Our approval will be contingent upon subsequent favorable approval by the New Mexico Oil Conservation Division.
4. The filing fee. The filing fee for a Unit Agreement is thirty dollars (\$30.00) for every section or partial section thereof. Please submit a filing fee in the amount of one hundred twenty dollars (\$120.00).

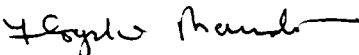
5. The initial plan of operations for this waterflood unit.
6. A list of the re-designated well names and numbers.
7. An original and one copy of both the Unit Agreement and the Unit Operating Agreement for our files. Again, the original set must contain original signatures.

As you requested, we have retained one copy of the Unit Agreement you sent with your letter dated October 3, 1989 and have enclosed the other four copies. For your information, we have also enclosed a brief list/description of the information required when submitting a unit containing New Mexico State Trust Lands for approval.

If we may be of further help, please do not hesitate to call Susan Howarth at (505) 827-5791.

Very truly yours,

W.R. HUMPHRIES  
COMMISSIONER OF PUBLIC LANDS

BY:   
FLOYD O. PRANDO, Director  
Oil and Gas Division  
(505) 827-5744

WHR/FOP/SMH

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BEFORE EXAMINER STOGNER

Oil Conservation Division

6 Exhibit No. ACase No. 9825 + 9826

15 34

EXHIBIT

"A"

## LEGEND

STATE  
LEASE

SAGE ENERGY COMPANY  
WEST TRES PAPALOTES PENN UNIT  
WEST TRES PAPALOTES FIELD  
LEA COUNTY, NEW MEXICO

SCALE: 1" = 2000'

4-28-89

VB-0026-01  
SAGE ENERGY  
COMPANY  
3-1-91

ETCHEVERRY "A"  
SAGE ENERGY  
COMPANY  
4-30-92

29-2



6

29-1

ETCHEVERRY  
SAGE ENERGY  
COMPANY  
11-24-71  
HBP

5

31-1

31-3

V-1791

SAGE

3-1-91

V-2160-1  
SAGE ENERGY  
COMPANY  
1-1-92

K-2043-4  
TOC  
GULFCOAST, INC  
12-19-71  
HBP

2000.5000  
F column  
For

Present  
Water  
Injection well.

475  
2700#

proposed  
Water  
Inj. well

All tanks  
operated  
by Sage

UNIT AGREEMENT

WEST TRES PAPALOTES PENN UNIT

LEA COUNTY, NEW MEXICO

BEFORE EXAMINER STOGNER

Oil Conservation Division

\_\_\_\_ Exhibit No. B

Case No. 9825+9826

UNIT AGREEMENT  
WEST TRES PAPALOTES PENN UNIT  
LEA COUNTY, NEW MEXICO

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Exhibit "B" (Schedule of Ownership)

Exhibit "C" (Schedule of Tract Participation)

UNIT AGREEMENT  
FOR THE DEVELOPMENT AND OPERATION OF THE

WEST TRES PAPALOTES PENN UNIT

LEA COUNTY, NEW MEXICO

THIS AGREEMENT, entered into as of the \_\_\_\_\_ day of \_\_\_\_\_, 1989, by and between the parties subscribing, ratifying or consenting hereto, and herein referred to as "parties hereto";

W I T N E S S E T H T H A T:

WHEREAS, the parties hereto are the owner of working, royalty or other oil and gas interests in the Unit Area subject to this agreement; and

WHEREAS, the Commissioner of Public Lands of the State of New Mexico is authorized by law (Sec. 3, Chap. 88, Laws 1943) as amended by Dec. 1 of Chapter 162, Laws of 1951, (Chap. 19, Art. 10, Sec. 45, N.M. Statutes 1978 Annot.), to consent to and approve the development of operation of State lands under agreements made by lessees of State land jointly or severally with other lessees where such agreements provide for the unit operation or development of part of or all of any oil or gas pool, field or area; and

WHEREAS, the Commissioner of Public Lands of the State of New Mexico is authorized by an Act of the Legislature (Sec. 1, Chap. 162, Laws of 1951; Chap. 19, Art. 10, Sec. 47, N.M. Stats. 1978 Annot.) to amend with the approval of lessee, evidenced by the lessee's execution of such agreement or otherwise, any oil and gas lease embracing State lands so that the length of the term of said lease may coincide with the term of such agreements for the unit operation and development of part or all of any oil or gas pool, field or area; and

WHEREAS, the Oil Conservation Division of the Energy & Minerals Department of the State of New Mexico is authorized by law (Chap. 72,

Laws 1935, as amended, being Sec. 70-2-1 et seq. New Mexico Statutes, 1978 Annotated) to approve this agreement and the conservation provisions hereof; and

WHEREAS, the parties hereto hold sufficient interests in the West Tres Papalotes Penn Unit Area, comprised of the land hereinafter designated, to give reasonably effective control of operations therein; and

WHEREAS, it is the purpose of the parties hereto to enable institution and consummation of secondary and/or enhanced oil recovery operations, conserve natural resources, prevent waste and secure the other benefits obtainable through development and operation of the area subject to this agreement under the terms, conditions and limitations herein set forth.

NOW THEREFORE, in consideration of the premises and the promises herein contained, the parties hereto commit to this agreement their respective interests in the Unitized Formation underlying the Unit Area, and agree severally among themselves as follows:

SECTION 1. ENABLING ACT AND REGULATIONS: The oil and gas operating regulations in effect as of the effective date hereof governing drilling and producing operations not inconsistent with the terms hereof or the laws of the State of New Mexico are hereby accepted and made a part of this agreement.

SECTION 2. DEFINITIONS: For the purpose of this agreement, the following terms and expressions are used herein shall mean:

(a) "Unit Area" is defined as the land depicted on Exhibit "A" and described by Tracts in Exhibit "B" attached hereto, and said land is hereby designated and recognized as constituting the Unit Area.

(b) "Commissioner" is defined as the Commissioner of Public Lands of the State of New Mexico.

(c) "Division" is defined as the Oil Conservation Division of the

State of New Mexico.

- (d) "Unitized Formation" shall mean that subsurface portion or portions of the Unit Area commonly known as the Permo Penn Limestone and identified as follows:

The Permo Penn Limestone shall be defined and construed as being that oil bearing limestone the top of which was encountered at a depth of 10,392 feet and the base of which was encountered at a depth of 10,510 feet (log measurements) in the Sage Energy Company New Mexico State No. 3 Well, located 1160 feet from the north line and 560 feet from the east line of Section 31, Township 14 South, Range 34 East, N.M.P.M., Lea County, New Mexico, as recorded on the BHC Acustilog of said well dated April 26, 1983.

- (e) "Unitized Substances" is defined as all oil, gas, gaseous substances, sulphur contained in gas, condensate, distillate and all associated and constituent liquid or liquefiable hydrocarbons within or produced from the Unitized Formation.

- (f) "Working Interest" is defined as an interest in Unitized Substances by virtue of a lease, operating agreement or otherwise, including a carried interest, which interest is chargeable with an obligation to pay or bear, either in cash or out of production or otherwise, all or a portion of the cost of drilling, developing, producing and operating the Unitized Formation. Any interest in Unitized Substances which is a Working Interest as of the date the owner thereof executes, ratifies or consents to this agreement shall thereafter be treated as a Working Interest for all purposes of this agreement.



- (g) "Royalty Interest" is defined as a right to or interest in any portion of the Unitized substances or proceeds thereof other than a Working Interest.
- (h) "Working Interest Owner" is defined as a party hereto who owns a Working Interest.
- (i) "Royalty Owner" is defined as a party hereto who owns a Royalty Interest.
- (j) "Tract" is defined as each parcel of land described as such and given a Tract number in Exhibit "B".
- (k) "Tract Participation" is defined as the percentages of Unitized Substances allocated hereunder to a Tract as hereinafter defined. The Tract Participation of the Tracts within the Unit Area is shown on Exhibit "B" attached hereto.
- (l) "Unit Participation" is defined as the sum of the percentages obtained by multiplying the Working Interest of a Working Interest Owner in each Tract having Tract Participation by the Tract Participation of such Tract
- (m) "Unit Operating Agreement" is defined as any agreement or agreements entered into, separately or collectively, by and between the Unit Operator and the Working Interest Owners as provided in Section 9, Accounting Provisions and Unit Operating Agreement, infra, and shall be styled "Unit Operating Agreement, West Tres Papalotes Penn Unit, Lea County, New Mexico".
- (n) "Unit Manager" is defined as the person or corporation appointed by the Unit Working Interest Owners to perform the duties of the Unit Operator until the selection and

qualification of a Successor Unit Operator as provided  
for in Section 8, Successor Unit Operator, hereof.

SECTION 3. UNIT AREA: The area specified on the map attached hereto marked Exhibit "A" is hereby designated and recognized constituting the Unit Area, containing 1120 acres, more or less, being the W/2 Section 29, E/2 Section 30, E/2 Section 31, and NW/4 Section 32, Township 14 South, Range 34 East, N.M.P.M., Lea County, New Mexico.

Exhibit "A" to the extent known to Unit Operator, shows the boundaries and identity of Tracts and leases in the Unit Area. Exhibit "B" attached hereto is a schedule showing, to the extent known to Unit Operator, the acreage comprising each Tract and the percentage of ownership of each Working Interest Owner in each Tract. However, nothing herein or in said schedule or map shall be construed as a representation by any party hereto as to the ownership of any interest other than such interest as shown in said map or schedule as being owned by such party. Exhibit "C" attached hereto is a schedule showing the Tract Participation of each Tract in the Unit Area, which Tract Participation has been calculated upon the basis of all tracts within the Unit Area being committed to this agreement as of the effective date hereof.

Exhibits "A", "B", and "C" shall be revised by Unit Operator whenever changes render such revision necessary and not less than two copies of such revision shall be filed with the Commissioner and Divison.

SECTION 4. EXPANSION: The Unit Area may, when practicable, be expanded to include therein any additional Tract or Tracts regarded as reasonably necessary or advisable for the purpose of this agreement. Such expansion shall be effected in the following manner.

(a) The Working Interest Owner or Owners of a Tract or Tracts desiring to bring such Tract or Tracts into the Unit Area shall file an application therefor with the Unit Operator requesting such admission.

(b) Unit Operator shall circulate a notice of the proposed expansion to each Working Interest Owner in the Tract or Tracts proposed to be included in the Unit and/or affected by the proposed expansion setting out the basis for admission, the Tract Participation proposed to be allocated to such Tract or Tracts, and other pertinent data. After negotiation (at Working Interest Owners' meeting or otherwise) if Working Interest Owners having a combined Unit Participation of ninety percent (90%) or more have agreed to such Tract or Tracts being brought into the Unit Area, then Unit Operator shall, after preliminary concurrence by the Commissioner and the Division:

- (1) Prepare a notice of proposed expansion describing the contemplated changes in the boundaries of the Unit Area, the reason therefor, the basis for admission of the additional Tract or Tracts, the Tract Participation to be allocated thereto, and the proposed effective date thereof; and
- (2) Furnish copies of said notice to the Commissioner and the Division, each Working Interest Owner and to the lessee and lessor whose interests are proposed to be committed, advising such parties that thirty (30) days will be allowed for submission to the Unit Operator of any objections to such proposed expansion; and
- (3) File, upon the expiration of said thirty-day period as set out in Subsection (2) immediately above, with the Commissioner and Division the following: (a) Evidence of mailing copies of said notice of expansion; (b) An application for such expansion; (c) An instrument containing the appropriate joinders in compliance with the qualification requirements as provided in Section 13, Tracts Qualified for Unit Participation and (d) Copies of

any objections received.

The expansion shall, after due consideration of all pertinent information and upon approval by the Commissioner and Division, become effective as of the date prescribed in the notice thereof. The revised Tract Participation of the respective Tracts included within the Unit Area prior to such enlargement shall remain in the same ratio one to another.

There shall never be any retroactive allocation or adjustment of operating expenses or of interest in the Unitized Substances produced (or the proceeds of the sale thereof) by reason of an expansion of the Unit Area; provided, however, this limitation shall not prevent any adjustment of investment necessitated by such expansion.

SECTION 5. UNITIZED LAND AND UNITIZED SUBSTANCES: All land committed to this agreement, as provided in Section 13, Tracts Qualified for Unit Participation, as to the Unitized Formation defined in Section 2, Definitions, shall constitute land referred to herein as "Unitized Land" or "land subject to this agreement". All oil and gas in the Unitized Formation in the Unitized Land are unitized under the terms of this agreement and herein are called "Unitized Substances".

SECTION 6. UNIT OPERATOR: SAGE ENERGY COMPANY is hereby designated as Unit Operator, and by signing this instrument as Unit Operator it agrees and consents to accept the duties and obligations of Unit Operator for the operation, development and production of Unitized Substances as herein provided. Whenever reference is made herein to the Unit Operator, such reference means the Unit Operator acting in that capacity and not as an owner of interests in Unitized Substances, and the term "Working Interest Owner" when used herein shall include or refer to Unit Operator as the owner of a Working Interest when such an interest is owned by it.

SECTION 7. RESIGNATION OR REMOVAL OF UNIT OPERATOR: Unit Operator shall have the right to resign at any time, but such resignation shall not become effective so as to release Unit Operator from the duties and obligations of Unit Operator and terminate Unit Operator's rights as such for a period of six (6) months after written notice of intention to

resign has been given by Unit Operator to all Working Interest Owners and the Commissioner and Division unless a new Unit Operator shall have taken over and assumed the duties and obligations of Unit Operator prior to the expiration of said period.

The Unit Operator shall, upon default or failure in the performance of its duties and obligations hereunder, be subject to removal only by unanimous vote of all Working Interest Owners other than Unit Operator. Such removal shall be effective upon notice thereof to the Commissioner and Division.

In all such instances of resignation or removal, until a successor to Unit Operator is selected and approved as hereinafter provided, the Working Interest Owners shall be jointly responsible for the performance of the duties of the Unit Operator and shall, not later than thirty (30) days before such resignation or removal becomes effective, appoint a Unit Manager to represent them in any action to be taken hereunder.

The resignation or removal of Unit Operator under this agreement shall not terminate its right, title or interest as the owner of a Working Interest or other interest in Unitized Substances, but upon the resignation or removal of Unit Operator becoming effective, such Unit Operator shall deliver possession of all equipment, books and records, materials, appurtenances and other assets used in conducting the Unit operations and owned by the Working Interest Owners (including any and all data and information which it might have gained or assembled by reason of its operation of the Unit Area) to the new duly qualified successor Unit Operator or to the Unit Manager if no such new Unit Operator is elected, to be used for the purpose of conduction Unit Operations hereunder. Nothing herein shall be construed as authorizing removal of any material, equipment or appurtenances needed for the preservation of any wells. Nothing herein contained shall be construed to relieve or discharge any Unit Operator who resigns or is removed hereunder from any liability or duties accruing to or performable by it prior to the effective date of such resignation or removal.

SECTION 8. SUCCESSOR UNIT OPERATOR: Whenever Unit Operator shall tender its resignation as Unit Operator or shall be removed as hereinabove provided, the Working Interest Owners, voting in the manner

provided in the Unit Operating Agreement, shall select a successor Unit Operator; provided, however, that the voting interest of the outgoing Unit Operator shall not be considered for any purpose if such outgoing Unit Operator fails to vote or votes only to succeed itself. Such selection of a successor Unit Operator shall not become effective until: (a) a Unit Operator so selected shall accept in writing the duties and responsibilities of Unit Operator, and (b) the selection shall have been approved by the Commissioner and Division. If no successor Unit Operator is selected as herein provided, the Commissioner may declare this agreement terminated.

SECTION 9. ACCOUNTING PROVISIONS AND UNIT OPERATING AGREEMENT: All costs and expenses incurred by Unit Operator in connection with the organization and formation of the Unit as well as those costs and expenses incurred in conducting Unit Operations hereunder shall be paid, apportioned among and borne by the Working Interest Owners in accordance with the Unit Operating Agreement. Such Unit Operating Agreement shall also provide the manner in which the Working Interest Owners shall be entitled to receive their respective proportionate and allocated share of the benefits accruing hereunder in conformity with their underlying operating agreements, leases or other independent contracts and such other rights and obligations as between Unit Operator and the Working Interest Owners as may be agreed upon by the Unit Operator and the Working Interest Owners; however, no such Unit Operating Agreement shall be deemed either to modify any of the terms and conditions of this Unit Agreement or to relieve the Unit Operator of any right or obligation established under this agreement, and in case of any inconsistency or conflict between this agreement and the Unit Operating Agreement, this agreement shall prevail. One true copy of any Unit Operating Agreement executed pursuant to this Section shall be filed with the Commissioner.

SECTION 10. RIGHTS AND OBLIGATIONS OF UNIT OPERATOR: Except as otherwise specifically provided herein, the exclusive right, privilege and duty of exercising any and all rights of the parties hereto which are necessary or convenient for prospecting for, producing, storing, allocating, and distributing the Unitized Substances are hereby delegated to and shall be exercised by the Unit Operator as herein

provided. Upon request therefor, acceptable evidence of title to said rights shall be deposited with said Unit Operator, and together with this agreement shall constitute and define the rights, privileges and obligations of Unit Operator. Nothing herein, however, shall be construed to transfer title to any land or to any lease or operating agreement, it being understood that under this agreement the Unit Operator, in its capacity as Unit Operator, shall exercise the rights of possession and use vested in the parties hereto only for the purposes herein specified.

SECTION 11. PLAN OF OPERATIONS: It is recognized and agreed by the parties hereto that all of the land subject to this agreement has been reasonably proven to be productive of Unitized Substances in paying quantities or is necessary for Unit Operations and that the object and purpose of this agreement is to formulate and to put into effect a secondary enhanced oil recovery project in order to effect a greater recovery of Unitized Substances, prevent waste and conserve natural resources. The parties hereto agree that the Unit Operator may, subject to the consent and approval of a plan of operation by the Working Interest Owners, the Division and the Commissioner, inject into the Unitized Formation, through any well or wells completed therein, brine, water, air, gas, oil, liquefied petroleum gas, steam and any other substance or a combination of any of said substances, whether produced from the Unitized Formation or not, and that the location of input wells and the rates of injection therein and the rate of production shall be governed by standards of good geologic and petroleum engineering practices and conservation methods. Reasonable diligence shall be exercised by Unit Operator in complying with the obligations of any approved plan of operation. The parties hereto, to the extent they have the right so to do, hereby grant Unit Operator the right to use brine or water (or both) produced from any formation underlying the Unit Area for injection into the Unitized Formation; provided, however, that this grant of said right shall not preclude the use of brine or water (or both) produced from formations other than the Unitized Formation for injection into a formation other than the Unitized Formation. After commencement of secondary and or enhanced oil recovery operations, Unit

Operator shall furnish the Commissioner and the Division monthly injection and production reports for each well in the Unit. The Working Interest Owners, the Commissioner and the Division shall be furnished periodic reports on the progress of the plan of operation and any revisions or changes thereto necessary to meet changed conditions or to protect the interests of all parties to this agreement; provided, however that any major revisions of the plan of operation involving a basic deviation from the initial plan of operation shall be subject to the consent and approval of the Working Interest Owners, the Commissioner and Division.

The initial plan of operation shall be filed with the Division and the Commissioner concurrently with the filing of this Unit Agreement for final approval. Reasonable diligence shall be exercised in complying with the obligations of said plan of operation.

Notwithstanding anything to the contrary herein contained, the Unit Operator shall commence, if not already having done so, secondary recovery operations and/or enhanced oil recovery operations on the Unit Area not later than six (6) months after the effective date of this Agreement, or any extension thereof approved by the Commissioner and Division, or this Agreement shall terminate automatically in which latter event the Unit Operator shall notify all interested parties. After such operations are commenced, Unit Operator shall carry on such operations as would a reasonably prudent operator under the same or similar circumstances.

SECTION 12. TRACT PARTICIPATION: The percentages of Tract Participation set forth in Exhibit "C" for each Tract within the Unit Area have been calculated and determined in accordance with the following formulas:

WHERE:

A = Tract Cumulative Oil Produced to 1-1-89

B = Tract Remaining Oil Reserves at 1-1-89

(Using 1 BOPD/Well Cutoff)

C = Total Unit Area Cumulative Oil Production to 1-1-89



D = Total Unit Area Remaining Oil Reserves at 1-1-89

(Using 1 BOPD/well Cutoff)

THEN:

A + B

Tract Participation = C + D

Such percentages of Tract Participation have been calculated upon the basis of all of said Tracts within the Unit Area being committed to this agreement as of the effective date hereof, and such Tract Participations shall govern the allocation of all Unitized Substances produced after the effective date hereof, subject, however, to any revision or revisions of the Unit Area and Exhibit "C" in accordance with the provisions hereof.

In the event less than all of the Tracts are committed hereto as of the effective date hereof Unit Operator shall promptly file with the Commissioner and Division at least two copies of revised Exhibits "B" and "C" setting forth on Exhibit "C" the revised Tract Participations opposite each of the qualified tracts, which shall be calculated by using the tract factors and formula set forth hereinabove, but applying the same only to the qualified Tracts. The revised Exhibits "B" and "C" shall, effective as of the effective date of this agreement, supersede the original Exhibits "B" and "C" attached hereto and shall thereafter govern the allocation of Unitized Substances unless disapproved by the Commissioner and Division within 30 days after filing.

If, subsequent to the effective date of this agreement, any additional tract becomes committed hereto under the provisions of Section 3, Unit Area, or Section 28, Non-Joinder and Subsequent Joinder, or any committed tract is excluded herefrom under the provisions of Section 27, Loss of Title, Unit Operator shall revise said Exhibit "B" and "C" or the latest revision thereof to show the new percentage participations of the then committed tracts, which revised exhibit shall, upon its approval by the Commissioner and the Division, supersede, as of its effective date, the last previously effective Exhibits "B" & "C". In any such revision of Exhibit "C" the revised

percentage participations of the respective tracts listed in the last previously effective Exhibit "C" shall remain in the same ratio one to another.

SECTION 13. TRACTS QUALIFIED FOR UNIT PARTICIPATION: On and after the effective date hereof, the Tracts within the Unit Area that shall be entitled to participate in the production of Unitized Substances therefrom shall be the Tracts within the Unit Area that are qualified as follows:

(a) Each Tract as to which Working Interest Owners owning one hundred percent (100%) of the Working Interest therein have become parties hereto and as to which Royalty Owners owning seventy-five percent (75%) or more of the Royalty Interest therein have become parties hereto.

(b) Each Tract as to which Working Interest Owners owning one hundred percent (100%) of the Working Interest therein have become parties hereto and as to which Royalty Owners owning less than seventy-five percent (75%) of the Royalty Interest therein have become parties hereto and, further, as to which:

(i) All Working Interest Owners in any such Tract have joined in a request for the commitment of such Tract to this agreement, and

(ii) Seventy-five percent (75%) of the combined voting interest of Working Interest Owners in all Tracts meeting the requirements of Section 13 (a) hereof have voted in favor of the commitment of such Tract.

For the purposes of this Section 13 (b), a Working Interest Owner's "voting interest" shall be equal to the ratio (expressed in percent) which its aggregate Unit Participation in all tracts qualifying under Section 13 (a) bears to the total Unit Participation of all Working Interest Owners in all Tracts

qualifying under Section 13 (a), as such Unit Participation is determined from the Tract Participation set out in Exhibit "C".

(c) Each tract as to which Working Interest Owners owning less than one hundred percent (100%) of the Working Interest therein have become parties hereto, regardless of the percentage of Royalty Interest therein which is committed hereto and, further, as to which:

(i) The Working Interest Owner operating any such Tract and all of the other Working Interest Owners in such Tract who have become parties hereto have joined in a request for the commitment of such Tract to this agreement and have executed and delivered an indemnity agreement indemnifying and agreeing to hold harmless the other Working Interest Owners in the Unit Area, their successors and assigns, against all claims and demands which may be made by the owners of working interests in such Tract who are not parties hereto and which arise out of the commitment of such Tract to this agreement, and

(ii) Seventy-five percent (75%) of the combined voting interests of Working Interest Owners in all Tracts meeting the requirements of Section 13 (a) and 13 (b) have voted in favor of the commitment of such Tract and acceptance of the indemnity agreement.

For the purpose of this Section 13 (c), a Working Interest Owner's "voting interest" shall be equal to the ratio (expressed in percent) which its aggregate Unit Participation in all Tracts qualifying under Section 13 (a) and (b) bears to the total Unit Participation of all Working Interest Owners in all Tracts qualifying under Section 13 (a) and 13 (b) as such Unit Participation is determined from the Tract Participation set out in Exhibit "C". Upon the commitment of such a Tract to

this agreement, the Unit Participation that would have been attributed to the nonsubscribing owners of the Working Interest in such Tract, had they become parties to this agreement and the Unit Operating Agreement, shall be attributed to the Working Interest Owners in such Tract who have become parties to such agreements in proportion to their respective Working interests in the Tract.

SECTION 14. ALLOCATION OF UNITIZED SUBSTANCES: All Unitized Substances produced and saved from the committed Tracts within the Unit Area (less, save and except any part of such Unitized Substances which is used in conformity with good operating practices on the Unit Area for drilling, operating, camp and other production, development and pressure maintenance purposes, or which is unavoidably lost) shall be apportioned among and allocated to the committed Tracts within the Unit Area in accordance with the Tract Participation effective hereunder as such Tract Participation is shown in Exhibit "C" or any revision thereof. The amount of Unitized Substances so allocated to each Tract, and only that amount (regardless of whether it be more or less than the amount of the actual production of Unitized Substances from the well or wells, if any, on such Tract), shall, for all intents, uses and purposes, be deemed to have been produced from such Tract.

The Unitized Substances allocated to each Tract shall be distributed among or accounted for to the parties hereto entitled to share in the production from such Tract in the same manner, in the same proportions, and upon the same conditions, as they would have participated and shared in the production from such Tract, or in the proceeds thereof, had this agreement not been entered into, and with the same legal force and effect. No Tract committed to this Agreement and qualified for participation as heretofore provided shall be subsequently excluded from participation hereunder on account of depletion of Unitized Substances from such Tract.

If the Working Interest or the Royalty Interest in any Tract is, on or after the effective date hereof, divided with respect to separate parcels or portions of such Tract and owned severally by different

persons, the Tract Participations assigned to such Tract shall, in the absence of a recordable instrument executed by all owners and furnished to Unit Operator fixing the divisions of ownership, be divided among such parcels or portions in proportion to the number of surface acres in each.

The Unitized Substances allocated to each Tract shall be delivered in kind to the respective Working Interest Owners and parties entitled thereto by virtue of the ownership of oil and gas rights therein or by purchase from such owners. Each Working Interest Owner and the parties entitled thereto shall have the continuing right to receive such production in kind at a common point within the Unit Area and to sell or dispose of the same as it sees fit. Each such party shall have the right to construct, maintain and operate all necessary facilities for that purpose on the Unit Area, provided the same are so constructed, maintained and operated as not to interfere with operations carried on pursuant hereto or with operations upon or with regard to formations other than the Unitized Formation conducted within the Unit Area. Subject to Section 16, Royalty Settlement, hereof, any extra expenditure incurred by unit Operator by reason of the delivery in kind of any portion of the Unitized Substances shall be borne by the party (excepting the State of New Mexico) receiving the same in kind.

If any party fails to take in kind or separately dispose of its proportionate share of Unitized Substances, Unit Operator shall have the right, for the time being and subject to revocation at will by the party owning the share, to purchase for its own account or sell to others such share at not less than the prevailing market price in the area for like production; provided that, all contracts of sale by Unit Operator of any other party's share of Unitized Substances shall be only for such reasonable periods of time as are consistent with the minimum needs of the industry under the circumstances, but in no event shall any contract be for a period in excess of five years. The proceeds of the Unitized Substances so disposed of by Unit Operator shall be paid to the party entitled thereto.

Any party receiving in kind or separately disposing of all or any part of the Unitized Substances allocated to any Tract or receiving the

proceeds therefrom shall be responsible for making payment of all royalty to the parties entitled thereto, and shall indemnify all parties hereto, including Unit Operator, against any liability for all royalties, overriding royalties, production payments, and all other payments chargeable against or payable out of such Unitized Substances or the proceeds therefrom.

SECTION 15. OIL IN LEASE TANKAGE ON EFFECTIVE DATE: Unit Operator shall make a proper and timely gauge of all lease and other tanks within the Unit Area in order to ascertain the amount of merchantable oil above the pipeline connection in such tanks as of 7:00 A.M. on the effective date hereof. All such oil which has been produced legally shall be and remain the property of the Working Interest Owner entitled thereto the same as if the Unit had not been formed; and such Working Interest Owner shall promptly remove said oil from the Unit Area. Any such oil not so removed shall be sold by Unit Operator for the account of such Working Interest Owner, subject to the payment of all royalty to Royalty Owners under the terms and provisions of the Unit Agreement and any applicable lease or leases and other contracts. All such oil as is in excess of the prior allowable of the well or wells from which the same was produced shall be regarded and treated the same as Unitized Substances produced after the effective date hereof. If, as of the effective date, hereof, any Tract is overproduced with respect to the allowable of the well or wells on that Tract and the amount of such overproduction has been sold or otherwise disposed of, such overproduction shall be regarded and included as a part of the Unitized Substances produced after the effective date hereof and the amount thereof charged to such Tract as having been delivered to the persons entitled to Unitized Substances allocated to such Tract.

SECTION 16. ROYALTY SETTLEMENT: The State of New Mexico and all Royalty Owners who, under existing contracts, are entitled to take in kind their share of the Unitized Substances allocated to such Tract, and Unit Operator shall make deliveries of such Royalty share taken in conformity with the applicable contracts, laws and regulations. Settlement for Royalty Interests not taken in kind shall be made by Unit Operator, or its agent, for and on behalf of the Working Interest Owners

responsible therefor under existing contracts, laws and regulations, on or before sixty (60) days after the end of the calendar month in which production is sold; provided, however, that nothing herein contained shall operate to relieve the lessees of any land from their respective lease obligations for the payment of any Royalty due under their leases, except that such Royalty shall be computed in accordance with the terms of this Unit Agreement.

If gas obtained from lands not subject to this Agreement is introduced into the Unitized Formation for use in pressure maintenance, stimulation of production, or increasing ultimate recovery, which shall be in conformity with a plan first approved by the Commissioner and the Division a like amount of gas, less appropriate deductions for loss from any cause may be withdrawn from the formation into which the gas was introduced, royalty free as to dry gas, but not the products extracted therefrom; provided that such withdrawal shall be pursuant to such conditions and formula as may be prescribed or approved by the Commissioner and Division; provided further, that such right of withdrawal shall terminate on the termination of this agreement. If liquefied petroleum gases obtained from lands or formations not subject to this agreement be injected into the Unitized Formation for the purpose of increasing ultimate recovery, which shall be in conformance with a plan first approved by the Commissioner and Division; part or all of such liquefied petroleum gases may be withdrawn royalty free pursuant to such conditions and formula as may be prescribed or approved by the Commissioner and Division.

Royalty due on account of State lands shall be computed and paid on the basis of all Unitized Substances allocated to such lands.

SECTION 17. RENTAL AGREEMENT: Rentals or minimum royalties due on leases committed hereto shall be paid by Working Interest Owners responsible therefor under existing contracts, laws and regulations, provided that nothing herein contained shall operate to relieve the lessees of any land from their respective lease obligations for payment of any rental or minimum royalty in lieu thereof due under their leases. Rental for lands of the State of New Mexico subject to this agreement shall be paid at the rate specified in the respective leases from the

State of New Mexico, or may be reduced or suspended under order of the Commissioner pursuant to applicable laws and regulations.

SECTION 18. CONSERVATION: Operations hereunder and production of Unitized Substances shall be conducted to provide for the most economical and efficient recovery of said substances without waste, as defined by State laws and regulations.

SECTION 19. DRAINAGE: The Unit Operator shall take appropriate and adequate measures to prevent drainage of Unitized Substances from unitized land by wells on land not subject to this agreement, or with consent of the Commissioner and pursuant to applicable regulations, pay a fair and reasonable compensatory royalty as determined by the Commissioner.

SECTION 20. LEASES AND CONTRACTS CONFORMED AND EXTENDED: The terms, conditions and provisions of all leases, subleases and other contracts relating to exploration, drilling, development or operation for oil or gas on lands committed to this agreement are hereby expressly modified and amended to the extent necessary to make the same conform to the provisions hereof, but otherwise to remain in full force and effect, and the parties hereto hereby consent that the Commissioner, as to State leases, shall by his approval hereof or by the approval hereof by his duly authorized representative, does hereby establish, alter, change or revoke the drilling, producing, rental minimum royalty and royalty requirements of State leases committed hereto and the regulations in respect thereto to conform said requirements to the provisions of this agreement. Without limiting the generality of the foregoing, all leases, subleases and contracts are particularly modified in accordance with the following:

(a) The development and operation of lands subject to this agreement under the terms hereof shall be deemed full performance of all obligations for development and operation with respect to each and every part or separately owned Tract subject to this agreement, regardless of whether there is any development of any particular part or Tract of the Unit Area, notwithstanding any-



thing to the contrary in the lease, operating agreement or other contract by and between the parties hereto, or their respective predecessors in interest, or any of them.

(b) Drilling, producing, secondary recovery or enhanced oil operations performed hereunder upon any Tract of unitized lands shall be accepted and deemed to be performed upon and for the benefit of each and every Tract of unitized land, and no lease shall be deemed to expire by reason of failure to drill or produce wells situated on land therein embraced.

(c) Suspension of drilling or producing operations on all Unitized land pursuant to direction or consent of the Division and Commissioner or their duly authorized representatives, shall be deemed to constitute such suspension pursuant to such direction or consent as to each and every Tract of unitized lands.

(d) Each lease, sublease, or contract relating to the exploration, drilling, development or operation for oil and gas which by its terms might expire prior to the termination of this agreement, is hereby extended beyond any such term so provided therein, so that it shall be continued in full force and effect for and during the terms of this agreement.

(e) Termination of this agreement shall not affect any lease which, pursuant to the terms thereof or any applicable laws shall continue in force and effect thereafter.

(f) Any lease which is made subject to this agreement shall continue in force beyond the term provided therein as to the lands committed hereto as long as such lands remain subject hereto.

(g) Any lease embracing lands of the State of New Mexico having only a portion of its land committed hereto, shall be segregated as to that portion committed and that not committed, and the terms

of such lease shall apply separately to such segregated portions commencing as of the effective date hereof; provided, however that notwithstanding any of the provisions of this agreement to the contrary, any lease embracing lands of the State of New Mexico having only a portion of its lands committed hereto shall continue in force and effect beyond the term provided therein as to all lands embraced in such lease if oil or gas is, or has heretofore been discovered in paying quantities on some part of the lands embraced in such lease committed to this agreement or, so so long as a portion of the Unitized Substances produced from the Unit Area is, under the terms of this agreement, allocated to the portion of the lands covered by such lease committed to this agreement, or at any time during the term hereof, as to any lease that is then valid and subsisting and upon which the lessee or the Unit Operator is then engaged in bonafide drilling, reworking, or secondary recovery operations on any part of the lands embraced in such lease, then the same as to all lands embraced therein shall remain in full force and effect so long as such operations are diligently prosecuted, and if they result in the production of oil or gas, said lease shall continue in full force and effect as to all of the lands embraced therein, so long thereafter as oil or gas in paying quantities is being produced from any portion of said lands.

SECTION 21. CONVENANTS RUN WITH LAND: The covenants herein shall be construed to be covenants running with the land with respect to the interests of the parties hereto and their successors in interest until this agreement terminates, and any grant, transfer or conveyance of interest in land or leases subject hereto shall be and hereby is conditioned upon the assumption of all privileges and obligations hereunder by the grantee, transferee, or other successor in interest. No assignment or transfer of any Working Interest subject hereto shall be binding upon Unit Operator until the first day of the calendar month after Unit Operator is furnished with the original, or acceptable photostatic or certified copy, of the record instrument of transfer; and

no assignment or transfer or any Royalty Interest subject hereto shall be binding upon the Working Interest owner responsible therefor until the first day of the calendar month after said Working Interest Owner is furnished with the original, or acceptable photostatic or certified copy, of the recorded instrument of transfer.

SECTION 22. EFFECTIVE DATE AND TERM: This agreement shall become binding upon each party who executes or ratifies it as of the date of execution or ratification by such party and shall become effective as of 7:00 A.M. of the first day of the calendar month next following:

(a) The execution or ratification of this agreement and the Unit Operating Agreement by Working Interest Owners having a combined Unit Participation of at least eighty-five percent (85%), and the execution or ratification of this agreement by Royalty Owners owning a combined interest of at least seventy percent (70%) of the Royalty Interest in said Unit Area; and

(b) The approval of this agreement by the Commissioner and the Commission; and

(c) The filing of at least one counterpart of this agreement for record in the office of the County Clerk of Lea County, New Mexico, by the Unit Operator; and

(d) The filing in the office of the County Clerk of Lea County, New Mexico, of a certificate by Unit Operator to the effect that (a), (b) and (c) above have been accomplished, and stating the effective date hereof;

and provided, further, that if (a), (b), and (d) above are not accomplished on or before \_\_\_\_\_, this agreement shall terminate ipso facto on said date (hereinafter called "termination date") and thereafter be of no further force or effect, unless prior thereto this agreement has been executed or ratified by Working Interest Owners having a combined Unit Participation of at least sixty-five

percent (65%) and the Working Interest Owners having a combined Unit Participation of at least eighty percent (80%) committed to this agreement have decided to extend said termination date for a period not to exceed one (1) year (hereinafter called "extended termination date"). If said termination date is so extended and (a), (b), (c) and (d) above are not accomplished on or before said extended termination date this agreement shall terminate ipso facto on said extended termination date and thereafter be of no further force or effect.

The term of this agreement shall be for and during the time that Unitized Substances are produced in paying quantities from the Unit Area and as long thereafter as diligent drilling, reworking or other operations (including secondary recovery operations) are prosecuted thereon without cessation of more than ninety (90) consecutive days, and as long thereafter as Unitized Substances are produced as aforesaid, unless sooner terminated by Working Interest Owners in the manner hereinafter provided.

This agreement may be terminated at any time with the approval of the Commissioner by Working Interest Owners having at least ninety percent (90%) Unit Participation, as determined from Exhibit "C". Notice of such termination shall be given by Unit Operator to all parties hereto.

Unit Operator shall within thirty (30) day after the termination date of this agreement, file for record in the office where a counterpart of this agreement is recorded, a certificate to the effect that this agreement has terminated according to its terms and stating further the termination date.

If not otherwise covered by the leases unitized under this agreement, Royalty Owners hereby grant Working Interest Owners a period of six (6) months after termination of this agreement in which to salvage, sell, distribute or otherwise dispose of the personal property and facilities used in connection with Unit Operations.

SECTION 23. APPEARANCE: Unit Operator shall have the right to appear for or on behalf of any and all interests affected hereby before the Commissioner and the Commission and to appeal from any order issued under the rules and regulations of the Commissioner or the Commission or

to apply for relief from any said rules and regulations or in any proceedings relative to operations before the Commissioner or the Commission, or any other legally constituted authority; provided, however, that any other interested party shall also have the right at his or its own expense to be heard in any such proceedings.

SECTION 24. NOTICES: All notices, demands, objections or statements required hereunder to be given or rendered to the parties hereto shall be deemed fully given if made in writing and personally delivered to the party or parties or sent by postpaid certified mail addressed to such party or parties at their respective addresses set forth in connection with the signatures hereto or to the ratification or consent hereof or to such other address as any such party or parties may have furnished in writing to the party sending the notice, demand or statement.

SECTION 25. NO WAIVER OF CERTAIN RIGHTS: Nothing in this Agreement contained shall be construed as a waiver by any party hereto of the right to assert any legal or constitutional right or defense as to the validity or invalidity of any law of the State wherein said unitized lands are located, or rules or regulations issued thereunder in any way affecting such party, or as a waiver by any such party of any right beyond his or its authority to waive; provided, however, that each party hereto covenants that during the existence of this agreement such party will not resort to any action at law or in equity to partition the Unit Area or the facilities used in the development or operation hereof and to that extent waives the benefits of all laws authorizing such partition.

SECTION 26. UNAVOIDABLE DELAY: All obligations under this agreement requiring the Unit Operator to commence or continue secondary recovery operations or to operate on or produce Unitized Substances from any of the lands covered by this agreement shall be suspended while, but only so long as, the Unit Operator despite the exercise of due care and diligence is prevented from complying with such obligations, in whole or in part, by strikes, acts of God, Federal, State or Municipal law or agency, unavoidable accident, uncontrollable delays in transportation, inability to obtain necessary materials in open market, or other matters

beyond the reasonable control of the Unit Operator whether similar to matters herein enumerated or not.

SECTION 27. LOSS OF TITLE: In the event any Tract ceases to have sufficient Working Interest Owners or Royalty Owners committed to this agreement to meet the conditions of Section 13, Tracts Qualified for Unit Participation, because of failure of title of any party hereto, such Tract shall be automatically regarded as not committed to this agreement effective as of 7:00 A.M. on the first day of the calendar month in which the failure of title is finally determined; provided, however, that such Tract shall not be so regarded if said Tract can be requalified for admission under Section 13 within ninety (90) days after the date on which such title failure was finally determined.

If any such Tract cannot be so requalified, Unit Operator shall revise the schedule previously filed with the Commissioner setting forth the Tracts committed hereto, and Unit Operator shall revise Exhibit "C" to show the tracts in the Unit Area that remain committed hereto and the Tract Participation of each of said Tracts, which revised Tract Participation shall be calculated and determined on the basis that the Tract Participation of each said Tracts shall remain in the same ratio one to the other. Copies of the revised schedule and exhibit shall be filed with the Commissioner and same shall be effective as of 7:00 A.M. on the first day of the calendar month in which such failure of title is finally determined.

If title to a Working Interest fails, the rights and obligations of Working Interest Owners by reason of such failure shall be governed by the Unit Operating Agreement. If title to a Royalty Interest fails, but the Tract to which it relates remains committed to this Agreement, the party whose title failed shall not be entitled to participate hereunder insofar as its participation is based on such lost Royalty Interest.

In the event of a dispute as to the title to any Working Interest or Royalty Interest subject hereto, payment or delivery on account thereof may be withheld without liability or interest until the dispute is finally settled; provided, that as to State land or leases, no payments of funds due the State of New Mexico shall be withheld, but such funds shall be deposited as directed by the Commissioner to be held as

unearned money pending final settlement of title dispute, and then applied as earned or returned in accordance with such final settlement.

Unit Operator, as such, is relieved from any responsibility for any defect or failure of any title hereunder.

SECTION 28. NONJOINER AND SUBSEQUENT JOINER: As the objective of this Unit Agreement is to have lands in the Unit Area operated and entitled to participation under the terms hereof, it is agreed that notwithstanding anything else herein, no joinder shall be considered a commitment to this Unit Agreement unless the Tract involved is qualified under Section 13 hereof, Tract Qualified for Unit Participation.

Joinder in the Unit Agreement by a Working Interest Owner, at any time, must be accompanied by appropriate joinder by the owner to the Unit Operating Agreement in order for the interest to be regarded as effectively committed to this Unit Agreement. Joinder by any owner of a Royalty Interest, at any time, must be accompanied by appropriate joinder by the owner of the corresponding Working Interest Owner in order for the interest to be regarded as committed hereto.

Any oil or gas interest in the Unitized Formation in lands within the Unit Area not committed hereto prior to final approval of this agreement by the Commissioner may thereafter be committed hereto upon compliance with the applicable provisions of Section 13, Tracts Qualified for Unit Participation, hereof, within a period of two (2) months thereafter on the same basis of participation as provided for in Section 12, Tract Participation, and as set forth in Exhibit "C", by the owner or owners thereof subscribing or consenting in writing to this agreement and, if the interest is a Working Interest, by the owner of such interest subscribing also to the Unit Operating Agreement.

It is understood and agreed, however, that after two (2) months from the Effective Date hereof, the right of subsequent joinder as provided in this Section shall be subject to such requirements or approvals and on such basis as may be agreed upon by Working Interests Owners having a combined Unit Participation of less than ninety percent (90%), provided that Tract Participation of each previously committed Tract shall remain in the same ratio one to the other. Such joinder by a Working Interest Owner must be evidenced by its execution or

ratification of this Unit Agreement and the Unit Operating Agreement. Such joinder by a Royalty Owner must be evidenced by its execution or ratification of this Unit Agreement and must be consented to in writing by the Working Interest Owner responsible for the payment of any benefits that may accrue hereunder on behalf of such Royalty Owner. Except as may be otherwise herein provided, subsequent joinders shall be effective at 7:00 A.M. of the first day of the month following the filing with the Commissioner, of duly executed documents necessary to establish effective commitment unless reasonable objection to such joinder by the Commissioner is duly made within sixty (60) days after such filing. Notwithstanding any of the provisions to the contrary, all commitments of the State of New Mexico lands must be approved by the Commissioner.

SECTION 29. COUNTERPARTS: This agreement may be executed in any number of counterparts, no one of which needs to be executed by all parties and may be ratified or consented to by separate instrument in writing specifically referring hereto, and shall be binding upon all those parties who have executed such a counterpart, ratification, or consent hereto with the same force and effect as if all parties had signed the same document, and regardless of whether or not it is executed by all other parties owning or claiming an interest in the lands within the above described Unit Area.

SECTION 30. JOINDER COMMITMENT: Execution as herein provided by any party either as a Working Interest Owner or as a Royalty Owner shall commit all interests that may be owned or controlled by such party.

SECTION 31. TAXES: Each party hereto shall, for its own account, render and pay its share of any taxes levied against or measured by the amount or value of the Unitized Substances produced from the unitized land; provided, however, that if it is required or if it be determined that the Unit Operator or the several Working Interest Owners must pay or advance said taxes for the account of the parties hereto, it is hereby expressly agreed that the parties so paying or advancing said taxes shall be reimbursed therefor by the parties hereto, including Royalty Owners, who may be responsible for taxes on their respective allocated share of said Unitized Substances. No such taxes shall be



charged to the State of New Mexico, or to any lessor who has a contract with a lessee which requires his lessee to pay such taxes.

SECTION 32. PERSONAL PROPERTY EXCEPTED: All lease and well equipment, materials and other facilities heretofore or hereafter placed by any of the Working Interest Owners on the lands covered hereby shall be deemed to be and shall remain personal property belonging to and may be removed by the Working Interest Owners. The rights and interest therein as among Working Interest Owners are covered by the Unit Operating Agreement.

SECTION 33. NO PARTNERSHIP: The duties, obligations and liabilities of the parties hereto are intended to be several and not joint or collective. This agreement is not intended to create, and shall not be construed to create, an association or trust, or to impose a partnership duty, obligation or liability with regard to any one or more of the parties hereto. Each party hereto shall be individually responsible for its own obligations as herein provided.

SECTION 34. CORRECTION OF ERRORS: It is hereby agreed by all parties to this agreement that Unit Operator is empowered to correct any mathematical or clerical errors which may exist in the pertinent exhibits to this agreement; provided, however, that correction of any error other than mathematical or clerical shall be made by Unit Operator only after first having obtained approval of Working Interest Owners having a combined Unit Participation of fifty percent (50%) or more and the Commissioner.

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be executed as of the first above written and have set opposite their respective names the date of execution.

OPERATOR: SAGE ENERGY COMPANY

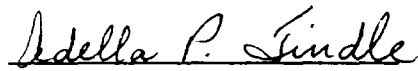
BY:   
Rex Amini, President

Address: 10101 Reunion Place  
Suite 800  
San Antonio, Texas  
78216

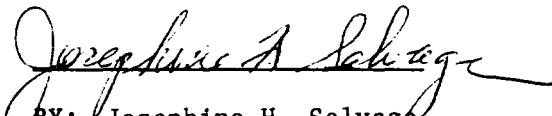
ROYALTY OWNERS

  
BY: John Etcheverry

Address: P.O. Box 1656  
Lovington, New Mexico 88260

  
BY: Adella P. Tindle

Address: 605 Flora St.  
Prescott, Arizona 86301

  
BY: Josephine H. Salvage

Address: 7009 Bellrose N.E.  
Albuquerque, New Mexico 87710

BY: \_\_\_\_\_

Address: \_\_\_\_\_

STATE OF TEXAS

COUNTY OF BEXAR

This instrument was acknowledged before me on September 7, 1989 by Raf Amiri, President of SAGE ENERGY COMPANY a Texas corporation, on behalf of said corporation.

Donna M. Wilde  
Notary Public

my Commission Expires: 4-29-91

THE STATE OF New Mexico

COUNTY OF Lea

"Before me, Lillis Ann Revelan, a notary public, on this day personally appeared Johnny Etcheberry known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

"Given under my hand and seal of office this 13th day of September A.D., 1989."

Lillis Ann Revelan  
Notary Public

My Commission Expires: 4-30-91

THE STATE OF Arizona

COUNTY OF Yavapai

"Before me, Jacque Manning, a notary public, on this day personally appeared Adella P. Tuttle, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

"Given under my hand and seal of office this 18th day of Sept, A.D., 1989."

Jacque Manning  
Notary Public

My Commission Expires Jan. 25, 1992

THE STATE OF

COUNTY OF

"Before me, Keta R. Portillo, a notary public, on this day personally appeared Josephine H. Sahag known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

"Given under my hand and seal of office this 20th day of Sept, A.D., 1989."

Keta R. Portillo  
Notary Public

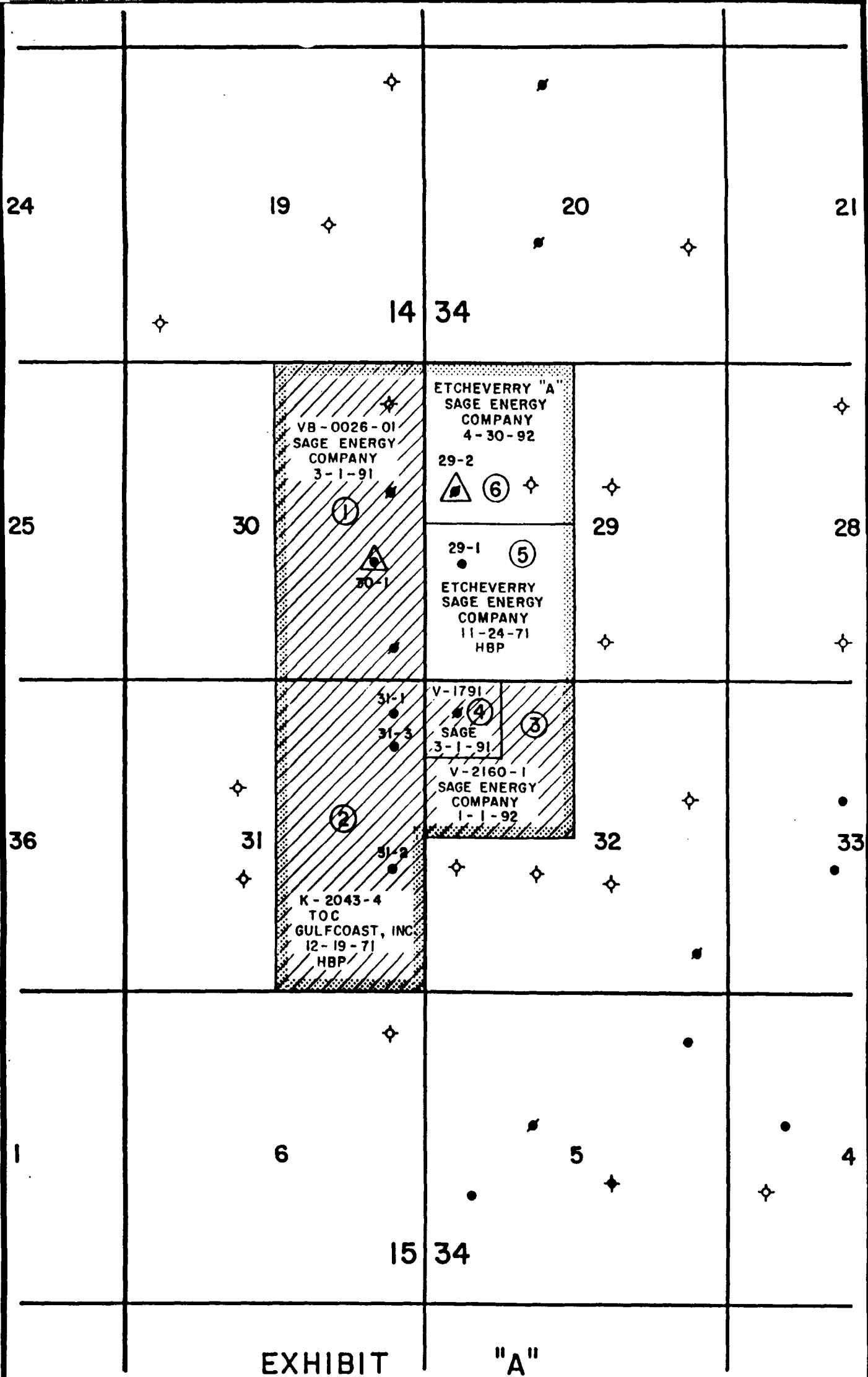
My Commission Expires  
Sept 26, 1989

THE STATE OF

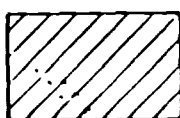
COUNTY OF

"Before me, \_\_\_\_\_, a notary public, on this day personally appeared \_\_\_\_\_, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

" Given under my hand and seal of office this \_\_\_\_\_ day of \_\_\_\_\_, A.D., \_\_\_\_\_."



SAGE ENERGY COMPANY  
WEST TRES PAPALOTES PENN UNIT  
WEST TRES PAPALOTES FIELD  
LEA COUNTY, NEW MEXICO



STATE  
LEASE

SCALE: 1" = 2000' 4-28-89

EXHIBIT "B"  
UNIT AGREEMENT  
West Tres Papalotes Pennsylvanian Unit

Tract Number & Participation Factor in Unit	Description of Land *	Number of Acres	Name or No. & exp. date of Lease	Basic Royalty and Percentage	State	18.75%	Lessee of Record	Overriding Royalty and Percentage	Working Interest and Percentage
1) 15.27267	E/2 30-14-34 *	320	New Mexico St. VB-0026-1 exp. 3-1-91		State		Sage Energy Company	-0-	Sage Energy 100%
2) 56.40217	E/2 31-14-34	320	New Mexico St. K-2043-4 exp. 12-19-71		State	12.5%	TOC-Gulf Coast, Inc.	Sage Energy 12.5	Sage Energy 100%
3) -0-	S/2NW/4 NE/4NW/4 32-14-34	120	New Mexico St. V-2160-1 exp. 1-1-92		State	16.67%	Sage Energy Company	Sage Energy 1.0	Sage Energy 100%
4) 5.61122	NW/4NW/4 32-14-34	40	New Mexico St. V-1791-1 exp. 3-1-91		State	16.67%	Sage Energy Company	Sage Energy 1.0	Sage Energy 100%
5) 17.98006	SW/4 29-14-34	160	Etcheverry exp. 11-24-71	John Etcheverry 10.15626 Adella P. Tindle 4.29687 Josephine Selvage 4.29687			Sage Energy Company	FDIC-A/C Metts .75 J.M. Huber Corp. 1.5625 Sage Energy 1.75	Sage Energy 100%
6) 4.73388	NW/4 29-14-34	160	Etcheverry "A" exp. 4-30-92	John Etcheverry 12.375 Adella P. Tindle 3.1875 Josephine Selvage 3.1875			Sage Energy Company	-0-	Sage Energy 100%

\*All Lands are in Township 14 South  
Range 34 East, and above No.'s mean  
Sec., T & R.

EXHIBIT "C"  
Part I  
Tract Unit Participation - Tract Basis

Tract	Lease/Wells	Owner	Type	Gross WI	Net NRI	Tract Participation (100% Ultimate)	Unit Participation Expense	Unit Participation Revenue
1	New Mexico State 30 #1	Sage State of New Mexico Sage	WI RI ORR	1.0000000 - -	.8025000 .1875000 .0100000	.1527267 .1527267 .1527267	.1527267 -0- -0-	.1225631 .0286363 .0015273
	TOTAL			1.0000000	1.0000000	.1527267	.1527267	.1527267
2	New Mexico State 1, 2, 3	Sage State of New Mexico Sage	WI RI ORR	1.0000000 - -	.7500000 .1250000 .1250000	.5640217 .5640217 .5640217	.5640217 -0- -0-	.4230163 .0705027 .0705027
	TOTAL			1.0000000	1.0000000	.5640217	.5640217	.5640217
3	State of New Mexico, V-2160	Sage State of New Mexico Sage	WI RI ORR	1.0000000 - -	.8233333 .1666667 .0100000	-0- -0- -0-	-0- -0- -0-	-0- -0- -0-
	TOTAL			1.0000000	1.0000000			
4	State of New Mexico, V-1791	Sage State of New Mexico Sage	WI RI ORR	1.0000000 - -	.8233333 .1666667 .0100000	.0561122 .0561122 .0561122	.0561122 -0- -0-	.0461991 .0093520 .0005611
	TOTAL			1.0000000	1.0000000	.0561122	.0561122	.0561122

EXHIBIT "C"  
Part I  
Tract Unit Participation - Tract Basis

Tract	Lease/Wells	Owner	Type	Gross WI	Net NRI	Tract Participation (100% Ultimate)	Unit Participation Expense	Unit Participation Revenue
5	John Etcheverry #1	Sage John Etcheverry Adella P. Tindle Josephine Selvage FDIC-A/C P. Metts J.M. Huber Corp. Sage Sage	WI RI RI RI ORR ORR ORR ORR	1.00000000 - - - - - - -	.7718750 .1015626 .0429687 .0429687 .0075000 .0156250 .0100000 .0075000	.1798006 .1798006 .1798006 .1798006 .1798006 .1798006 .1798006 .1798006	.1798006 -0- -0- -0- -0- -0- -0- -0-	.1387836 .0182610 .0077258 .0077258 .0013485 .0028094 .0017980 .0013485
TOTAL				1.00000000	1.00000000	.1798006	.1798006	.1798006
6	John Etcheverry "A" #2	Sage John Etcheverry Adella Tindle Josephine Selvage	WI RI RI RI	1.00000000 - - -	.8125000 .1015626 .0429687 .0429687	.0473388 .0473388 .0473388 .0473388	.0473388 -0- -0- -0-	.0384628 .0048078 .0020341 .0020341
TOTAL				1.00000000	1.00000000	1.00000000	1.00000000	1.00000000

EXHIBIT "C"  
Part II  
Tract & Unit Participation - Owner Basis

Tract	Owner	Type	Gross WI	Net NRI	Tract Participation (100% Ultimate)	Unit Participation Expense	Unit Participation Revenue
1)	Sage	WI	1.0000000	.8025000	.1527267	.1527267	.1225631
2)	Sage	WI	1.0000000	.7500000	.5640217	.5640217	.4230163
3)	Sage	WI	1.0000000	.8233333	-0-	-0-	-0-
4)	Sage	WI	1.0000000	.8233333	.0561122	.0561122	.0461991
5)	Sage	WI	1.0000000	.7718750	.1798006	.1798006	.1387836
6)	Sage	WI	1.0000000	.8125000	.0473388	.0473388	.0384628
5)	Sage	ORR	-0-	.0075000	.1798006	-0-	.0013485
1)	Sage	ORR	-0-	.0100000	.1527267	-0-	.0015273
3)	Sage	ORR	-0-	.0100000	-0-	-0-	-0-
4)	Sage	ORR	-0-	.0100000	.0561122	-0-	.0005611
5)	Sage	ORR	-0-	.0100000	.1798006	-0-	.0017980
2)	Sage	ORR	-0-	.1250000	.5640217	-0-	.0705027
	Total						.8447625
5)	John Etcheverry	RI	-0-	.1015626	.1798006	-0-	.0182610
6)	John Etcheverry	RI	-0-	.1015626	.0473388	-0-	.0048078
	Total						.0230688



EXHIBIT "C"  
Part II  
Tract & Unit Participation - Owner Basis

Tract	Owner	Type	Gross WI	Net NRI	Tract Participation (100% Ultimate)	Unit Participation Expense	Unit Participation Revenue
5)	J.M. Huber Corp.	ORR	-0-	.0156250	.1798006	-0-	.0028094
5)	FDIC- R. Metts	ORR	-0-		.0075000	-0-	.0013485
1)	State of New Mexico	RI	-0-	.1875000	.1527267	-0-	.0286363
2)	State of New Mexico	RI	-0-	.1250000	.5640217	-0-	.0705027
3)	State of New Mexico	RI	-0-	.1666667	-0-	-0-	-0-
4)	State of New Mexico	RI	-0-	.1666667	.0561122	-0-	.0093520
	Total						.1084910
5)	Josephine Selvage	RI	-0-	.0429687	.1798006	-0-	.0077258
6)	Josephine Selvage	RI	-0-	.0429687	.0473388	-0-	.0020341
	Total						.0097599
5)	Adella P. Tindle	RI	-0-	.0429687	.1798006	-0-	.0077258
6)	Adella P. Tindle	RI	-0-	.0429687	.0473388	-0-	.0020341
	Total						.0097599
	Grand Total						1.0000000

**PILOT WATERFLOOD EXPANSION AND UNITIZATION STUDY**

**WEST TRES PAPALOTES PENN UNIT  
WEST TRES PAPALOTES FIELD  
LEA COUNTY, NEW MEXICO**

**BEFORE EXAMINER STOGNER**

**Oil Conservation Division**

**Exhibit No. D**

**Case No. 9825+9826**

**By**  
**Sage Energy Company**  
**Midland, Texas**

**Pilot Waterflood Expansion and Unitization Study**

**West Tres Papalotes Penn Unit  
West Tres Papalotes Field  
Lea County, New Mexico**

**Sage Energy Company  
Midland, Texas**

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I. Waterflood Economics	5

## List of Exhibits

Exhibit Number	Item
1	Base Unit Map
2	Typical Log
3	Unitization Parameters
4	Base Land Map
5	Main Pay Zone Net Isopach
6	Primary Decline and Flood Response Curve
7	Location Map of West Tres Papalotes
8	Penn Structure Map
9	East-West Cross Section
10	Vacuum Middle Penn Waterflood Map
11	Vacuum Middle Penn Waterflood Performance
12	West Tres Papalotes Penn Waterflood Projection
13	Waterflood Economic Analysis

## Tables

1	Unit Participation by Tract
2	Unit Participation by Owner

## I. Introduction

The State of New Mexico Oil Conservation Division on September 4, 1987, and by Order No. R-8505 granted to Sage Energy the authority to conduct a pilot waterflood on its New Mexico "30 State Lease, West Tres Papalotes - Pennsylvanian Pool, Lea County, New Mexico. Water was to be injected into the Bough "C" member of the Pennsylvanian formation from perforations at 10,392 feet to 10,407 feet in the New Mexico "30" State Well No. 1 located 1980 feet from the North line and 800 feet from the East line of Section 30, Township 14 South, Range 34 East. The subject pilot was designated the Sage Energy Company State "30" Lease Waterflood Project and was governed by the provision of Rules 701 through 708 of the Division Rules and Regulations. Since there has been waterflood response in the pilot area, Sage is requesting that it be expanded and unitized as shown on Exhibit No. 1.

## II. Parameter Study

### A. Base Map

The base map shown in Exhibit No. 1 with appropriate Tract and Well numbers is the area to be unitized. It contains 1120 surface acres.

### B. Vertical Interval to be Unitized

Sage recommends unitization of the subsurface interval of the Permo Penn Limestone and identified as follows:

The Permo Penn Limestone shall be defined and construed as being that oil bearing limestone, the top of which was encountered at a depth of 10,392 feet and the base of which was encountered at a depth of 10,510 feet (log measurements) in the Sage Energy Company New Mexico State No. 3 Well, located 1160 feet from the north line and 560 feet from the east line of Section 31, Township 14 South, Range 34 East N.M.P.M., Lea County, New Mexico, as recorded on the BHC Acoustilog of said well dated April 26, 1983 (Exhibit No. 2).

### C. Participation Parameters

Participation parameters for the Unit Area are tabulated by tract and by working interest owner in

Tables 1 and 2, respectively. A summary of the unitization parameters is listed in Exhibit No. 3. Pertinent comments about each parameter follows.

1. Usable Wellbores - The term "usable wellbore" includes all wells within the Unit Area that have potential value either as injection or producing wells. Wells that are excluded are those that have been permanently abandoned or have severe downhole mechanical obstructions.
2. Surface Acres - Since detailed tract by tract survey data was not available for this report, nominal acreage based on commercial land maps was used in this tabulation. (Exhibit No. 4)
3. Cumulative Production - Cumulative oil production to January 1, 1989, was tabulated. Cumulative gas production was not used as a participation parameter.
4. Current Six Month Production - Current production from January 1 through July 1, 1989, of oil was tabulated for this six month period. The production was obtained from NMOC Form C-115.
5. Remaining Primary Reserves - Remaining Primary Reserves as of January 1, 1989, were estimated through the use of semi-log rate-time curves (decline curves). Individual lease decline curves were well established making reliable estimates of remaining reserves possible. The decline curves were extrapolated to an economic limit of 90 BOPM per producing well.
6. Main Pay Zone Net Pay - Due to the lack of cores and other petrophysical data, the net pay was picked from Gamma Ray - Acoustic logs using a 5% porosity cutoff. The Main Pay was picked as the zone that was continuous across the field; this being the interval 10,397' - 10,406' on the Sage New Mexico State No. 3 type log. An isopach map using these net pay figures was constructed (Exhibit No. 5). The Main Pay net acre-feet was then calculated from planimetered data of the isopach map.
7. Primary Ultimate Oil Recovery - The primary ultimate was calculated by adding the remaining primary oil reserves to the cumulative oil production as of January 1, 1989.

### III. Waterflood Study

#### A. Recommendation

Since there has been waterflood response in the pilot area as indicated by increased oil production in Well No.'s 29-1 and 31-3 (Exhibit No. 6), Sage is requesting expansion of the pilot area and unitization of the field, based on 100% Primary Ultimate Oil Recovery.

#### B. Introduction and Summary

In the proposed unit area there are three producing wells, one temporarily abandoned, and one water injection well. Three producing wells have been plugged and abandoned. There are two plugged and abandoned dry holes. The three producing wells make 57 BOPD, 46 BWPD, and 70 MCFD. Injection into the water injection well is 475 BWPD @ 2700 psi.

As of January 1, 1989, cumulative oil production was 1,164,885 BO with a remaining primary of 141,887 BO based on the current 10%/yr decline. Cumulative injection in the pilot waterflood November 1, 1989, was 431,302 BW. Injection began January 15, 1988.

A full scale waterflood will require a capital investment of \$1,498,900. Incremental secondary recovery of 1,067,000 BO will result in a 3.83 year payout, 37.22% rate of return and \$14,656,600 net profit, before Federal Income Taxes.

#### C. Field Location and Discovery

The West Tres Papalotes Field is located seventeen miles northwest of Lovington, New Mexico, on the western platform margin of the Tatum Basin. Its location in relation to other fields is shown on Exhibit No. 7.

The field was discovered in 1972 with production from the Permo Penn Limestone at an average depth of 10,400 feet.

#### D. Field Development History

Early development occurred during 1972. The typical well was perforated through casing and acidized with 500 to 2500 gals. of 15% hydrochloric acid.



#### E. Geology

The West Tres Papalotes Field produces from several members of the Bough "C" formation. The Bough "C" is widely productive along the western platform margin of the Tatum Basin. Dated as Permo-Penn in age, the productive members consist of clean, porous, white limestone, very fossiliferous, with chert nodules interspersed within the limestone. The depositional model of this reservoir is most likely algal mats that grew and thrived within the photic zone, basinward from the basin edge in a relatively high energy environment, creating in the process the porous, high permeability productive limestone.

Exhibit No. 8 is a structure map on the top of the main pay which indicates a plunging anticline to the south. Exhibit No. 5 is a net pay isopach of the main pay using a 5% porosity cut off. The field is self contained in that the field boundary is defined by a porosity pinchout (see cross section on Exhibit No. 9). There is no defined oil-water contact.

#### F. Reservoir and Fluid Properties

Due to the lack of cores and the quality of logs that were run, certain reservoir properties could not be determined. Likewise, no fluid samples have been taken for running PVT analysis. Lack of any bottom hole pressures made material balance calculations impossible. The following is a list of properties that are known:

Estimated Productive Area	920 AC
Type Drive	Solution Gas
Oil/Water Contact	None
Current GOR	2718 SCF/STB
Oil Gravity, API	41
Reservoir Temperature	153
Gas Gravity	.85
Average Porosity	5-7%
Average Net Pay	10-12'
Main Pay Zone Net Pay	8,209 ac-ft

#### G. Unit Waterflood Reserves

Because of an insufficient quantity of basic reservoir data, secondary reserves were calculated by analogy with Mobil's Vacuum (Middle) Penn Waterflood, seventeen miles to the south. Depth (10,400') and quality of

pay are similar. It is the only recorded Penn waterflood in New Mexico. There is one water injection well and one producing well on 80 acre spacing (Exhibit No. 10). Water injection began into well No. 147 in September, 1974. Response was seen in the Bridges State #165 one year and four months later (Exhibit No. 11). The well peaked at 132 BOPD and averaged 86 BOPD for six years. Incremental secondary oil has been 199 MBO for a primary to secondary ratio of one to one. Water breakthrough did not occur until nine years after the start of water injection. In contrast, the proposed expanded waterflood peaks at 45 BOPD/well and maintains its peak for four years. The recovery ratio is 0.92/1, which corresponds to 1,067,000 bbls of secondary oil, depending on oil price.

#### H. Plan for Waterflood Operation

Sage plans to expand the pilot waterflood by sidetracking well 29-2 600 feet to the North and putting it on water injection. Depending upon results, Sage will then drill producing well 29-3 and 31-4 and convert 31-2 to water injection (Exhibit No. 5). Estimated cost is \$1,498,900. The expanded injection system will require 300-500 BWPD per well at a maximum injection pressure of 3000 psi. The current system is closed with a gas blanket on the water supply tank. Injection is down internally plastic coated tubing set on a nickel coated packer. All plugged and abandoned wells were plugged adequately to protect all known producing and fresh water zones.

#### I. Waterflood Economics

The escalated incremental economics of continued operations versus the expanded pilot waterflood are summarized on the following page. Detailed cash flow is shown on Exhibit No. 13.

**Waterflood Profitability  
(BFIT)**

Capital Investment	\$1,498,900
Cash Flow	14,656,600
Present Worth @ 10%	5,141,500
Payout, years	3.83
Rate of Return	37.22%
Gross Oil Reserves	1,067,000 bbls

**Assumptions:**

Working Interest:	100.00
Net Revenue Interest:	84.96
Oil Price:	18.50/bbl
Gas Price:	0
Effective Date:	January 1, 1990

### Waterflood Capital Investment

Cement lined injection lines, wrapped and buried	\$87,900
Connections, valves and meters	15,000
Labor	10,000
Damages	2,000
Drill 1 water injection well	396,000
Drill 2 producing wells	900,000
Convert 1 producing well to injection	75,000
Misc.	<u>13,000</u>
	\$1,498,900

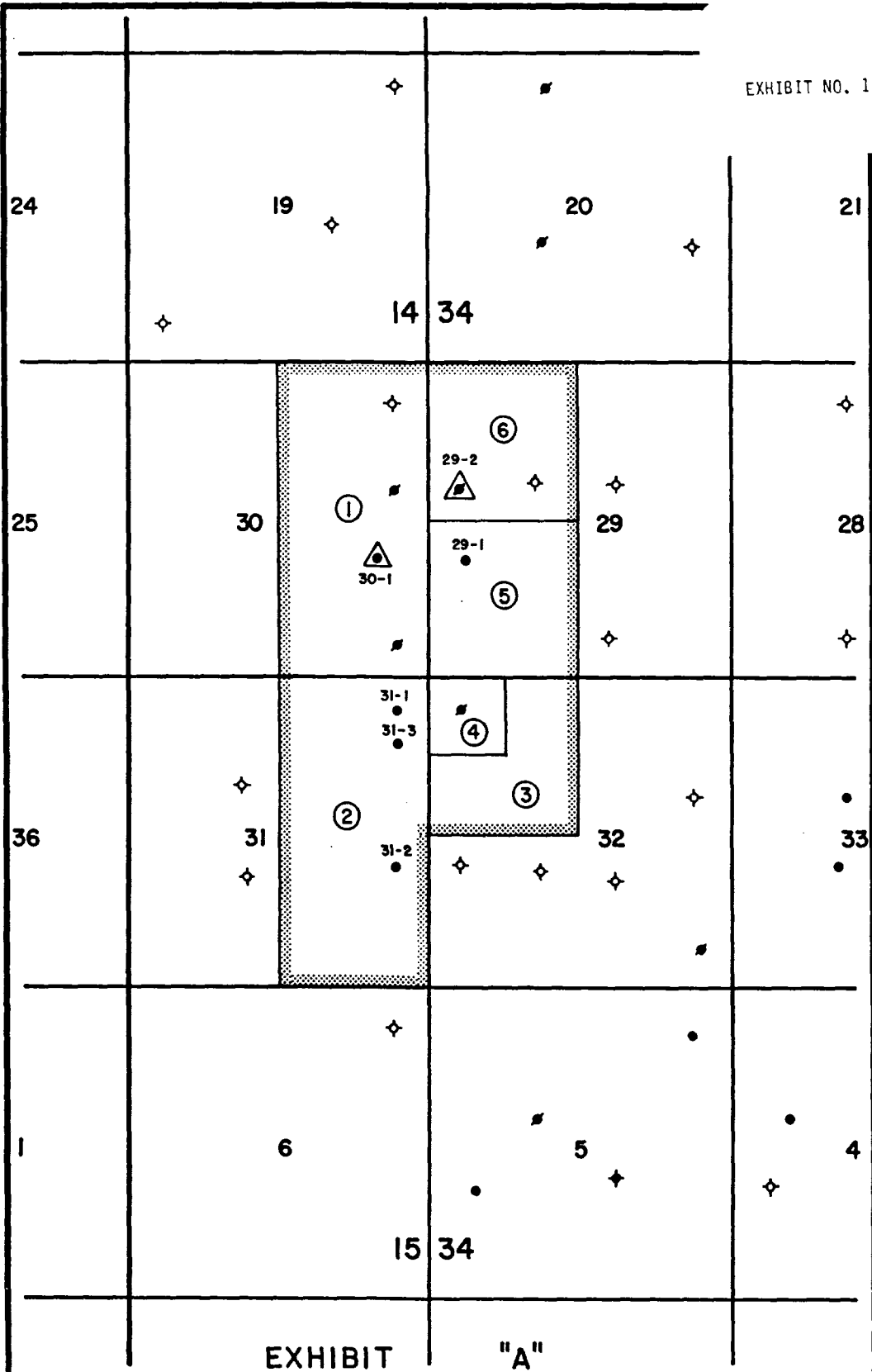
### Operating Costs

Operating cost per well (Including Inj. Well)	\$2500/month
Average injection per well	500 BWPD
Initial Operating Cost	\$15000/month

**EXHIBITS**

**1 Through 13**

EXHIBIT NO. 1



SAGE ENERGY COMPANY  
WEST TRES PAPALOTES PENN UNIT  
WEST TRES PAPALOTES FIELD  
LEA COUNTY, NEW MEXICO  
SCALE: 1" = 2000'  
4 - 28 - 89

**DresserAtlas**

**DRESSER**

# BHC Acoustilog<sup>®</sup> Gamma Ray



FILE NO

API NO

FIELD  
PRINT!

1039812-  
12406

Company SAGE ENERGY

Well N M STATE #3

Field SAUNDERS

County LEA State N.M.

LOCATION:

NOT AVAILABLE ON LOCATION  
1160 FWL 2560 FFL

SEC 31 TWP 14S RGE 34E

Other Services

DLGCR

Permanent Datum GL 4144.3

Elev. 4161

Log Measured from KB

17 Ft. Above Permanent Datum

Drilling Measured from KB

Elev.

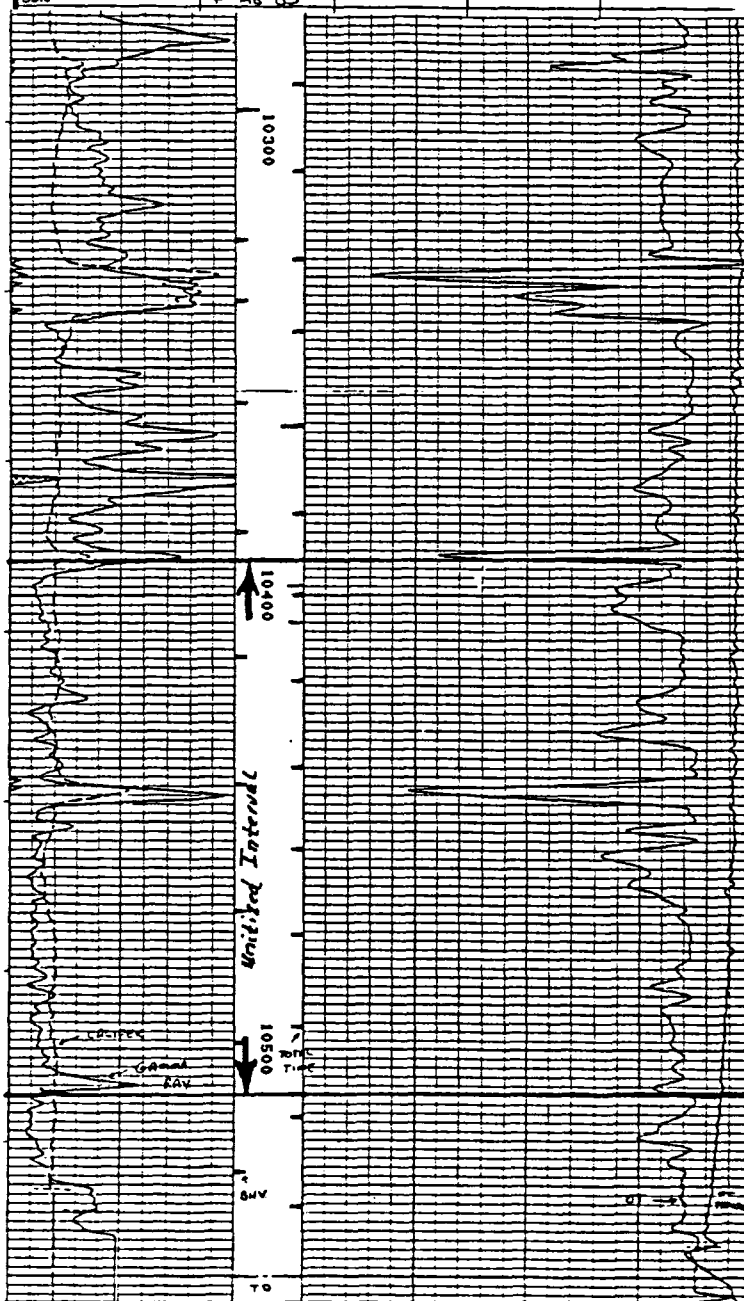
KB

DF

GL

Date

4-26-83



T/ PermoPenn Lime Pay

B/ Field Pay

SCALE

0.20

1.00

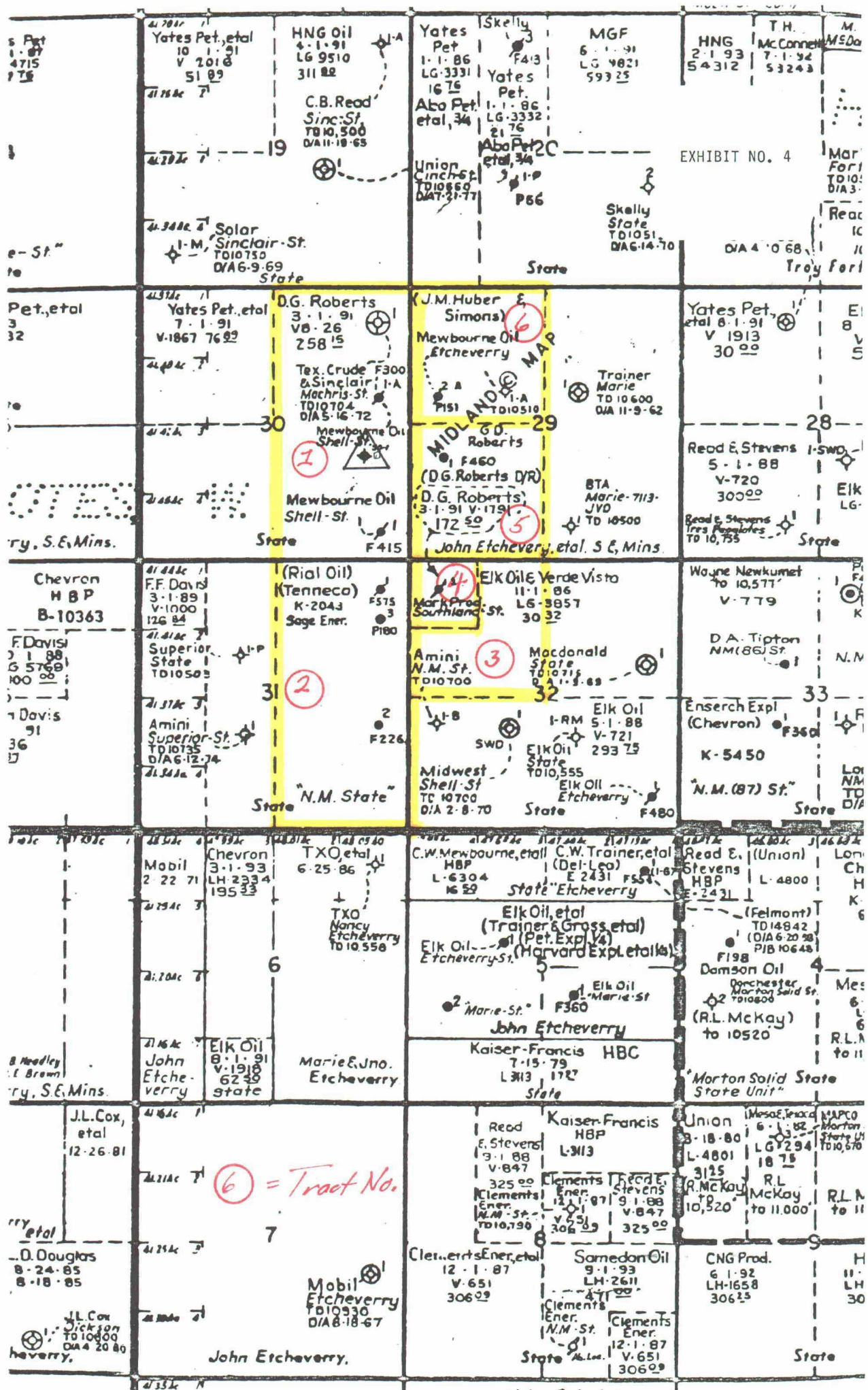
ACTUALS

UNITIZATION CARROLLERS  
WEST TRES PRODUCTIONS UNIT  
STATE OF NEW MEXICO

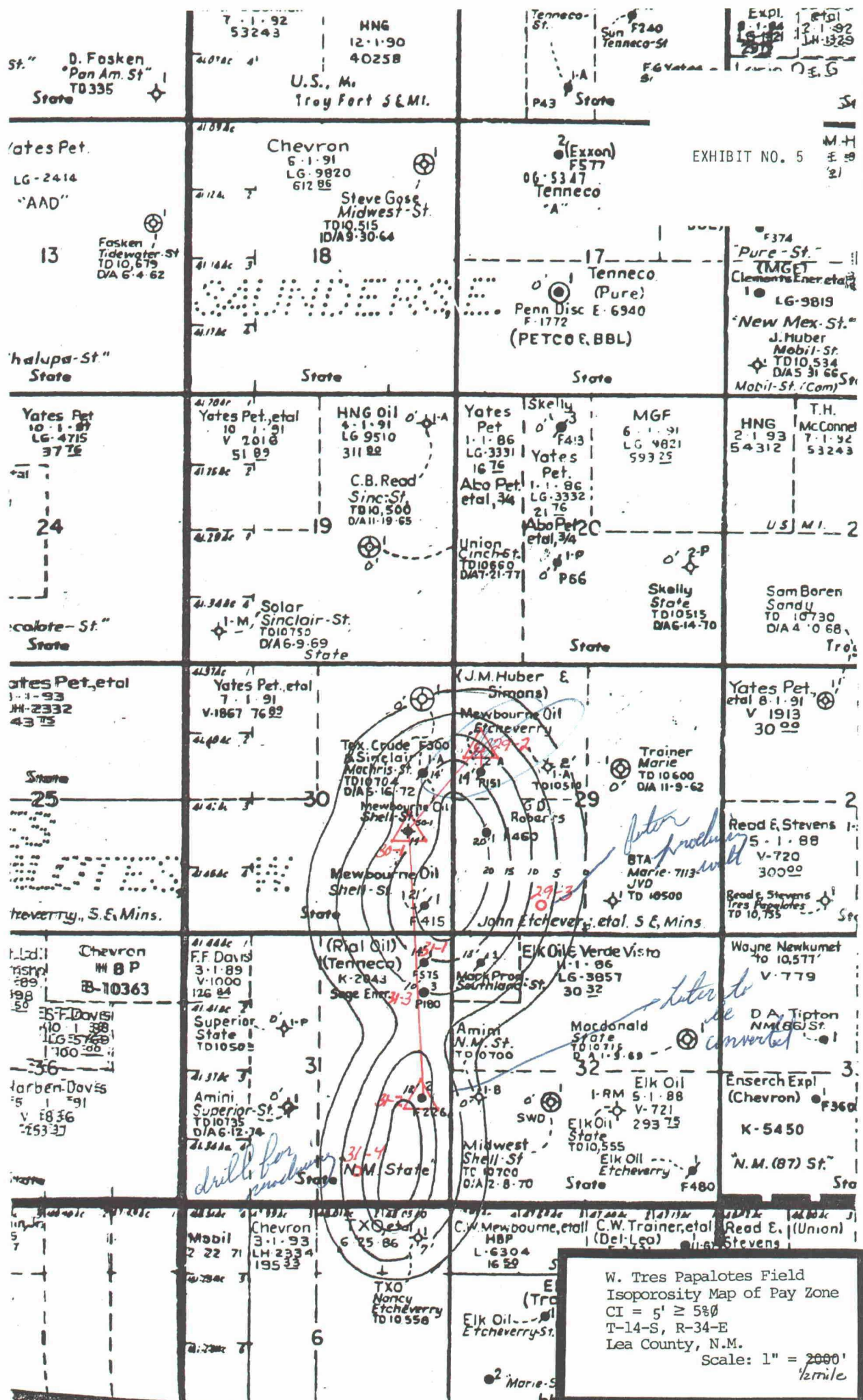
TRACT NO.	USABLE WELLS NO.	SURFACE ACRES NO.	CUMULATIVE OIL PERCENT TO 1/1/89	6 Mo. Rate 1-8/89 Rate 80	6 Mo. Rate 1-8/89 Rate 80	PRIMARY REMAINING OIL PERCENT	NET ACRE FEET PERCENT	PRIMARY OIL PERCENT
1	1	320	0.2857143	199925	0.1713148	0	2322	0.157267
2	3	320	0.2857143	599825	0.5149231	0	2740	0.3337800
3	0	120	0.1071429	0	0.0000000	0	273	0.0335562
4	0	40	0.0357143	73327	0.0629478	0	446	0.0542306
5	1	160	0.1428571	230309	0.1977096	0	1600	0.2046534
6	0	160	0.1428571	61862	0.0531027	0	748	0.0911195
GRAND TOTAL	5	1420	1.0000000	1164885	1.0000000	1.0000000	8209	1.0000000

1306792 1.0000000











BOPD/BUPD

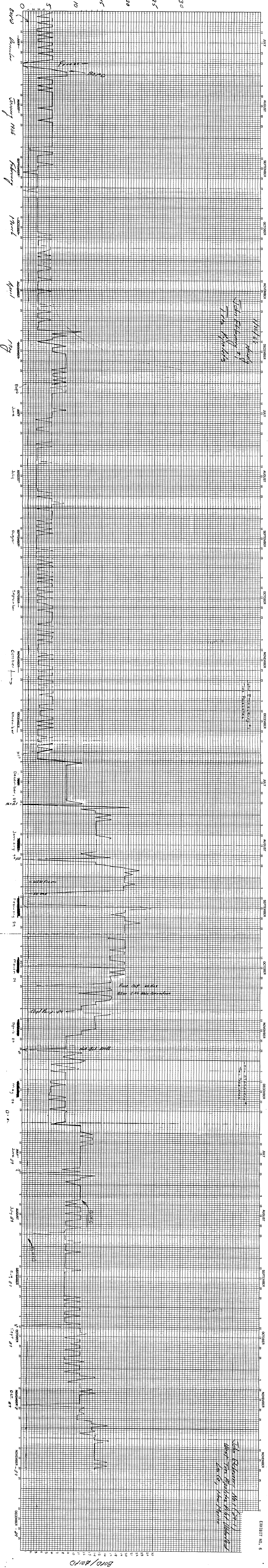


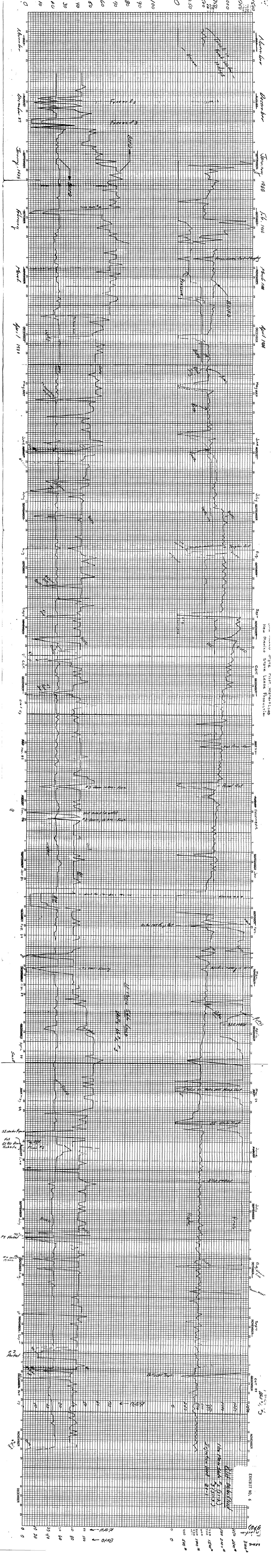
EXHIBIT NO. 6

BOPD/BUPD



(BOPP N. Mexico State Lease - 2 wells)

BAPD - Injected  
(N. Mexico 30<sup>th</sup>, WILU)



New Mexico State Lease Production

11167-2



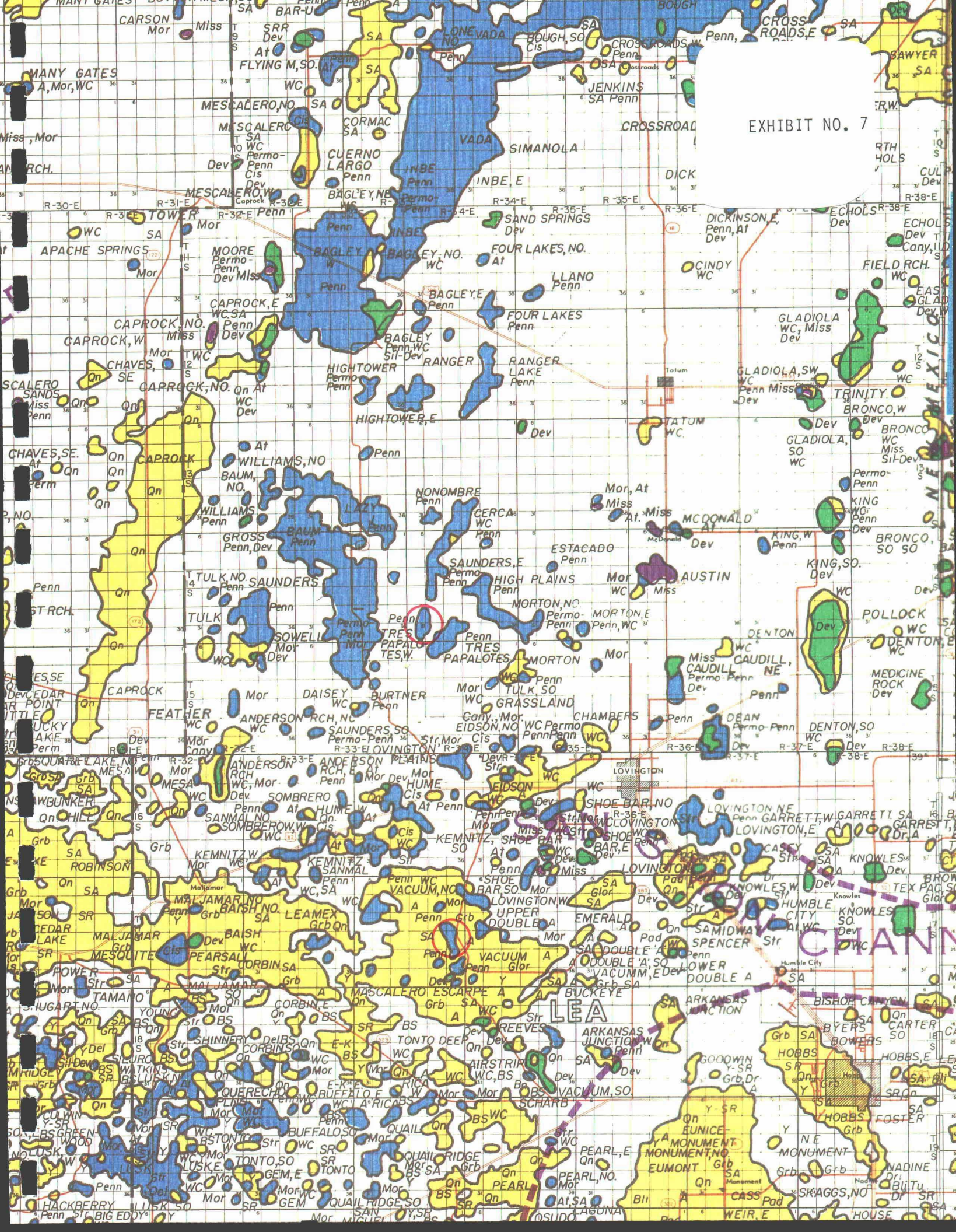


EXHIBIT NO. 7