

ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION  
- Engineering Bureau -

ADMINISTRATIVE APPLICATION COVERSHEET

THIS COVERSHEET IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS

Application Acronyms:

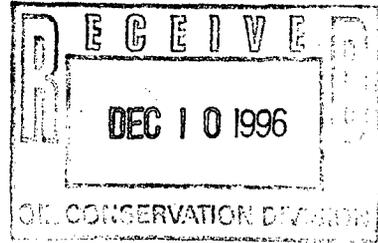
- [NSP-Non-Standard Proration Unit] [NSL-Non-Standard Location]
- [DD-Directional Drilling] [SD-Simultaneous Dedication]
- [DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]
- [PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]
- [WFX-Waterflood Expansion]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

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

- [A] Location - Spacing Unit - Directional Drilling
- NSL  NSP  DD  SD

Check One Only for [B] or [C]

- [B] Commingling - Storage - Measurement
- DHC  CTB  PLC  PC  OLS  OLM
- [C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery
- WFX  PMX  SWD  IPI  EOR  PPR



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

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

[3] INFORMATION / DATA SUBMITTED IS COMPLETE - Statement of Understanding

I hereby certify that I, or personnel under my supervision, have read and complied with all applicable Rules and Regulations of the Oil Conservation Division. Further, I assert that the attached application for administrative approval is accurate and complete to the best of my knowledge and where applicable, verify that all interest (WI, RI, ORRI) is common. I further verify that all applicable API Numbers are included. I understand that any omission of data, information or notification is cause to have the application package returned with no action taken.

Note: Statement must be completed by an individual with supervisory capacity.

Paul C. Thompson  
Print or Type Name

*Paul C. Thompson*  
Signature

President  
Title

12/2/96  
Date

DISTRICT I  
P.O. Box 1980, Hobbs, NM 88241-1980

DISTRICT II  
811 South First St., Artesia, NM 88210-2835

DISTRICT III  
1000 Rio Brazos Rd, Aztec, NM 87410-1693

State of New Mexico  
Energy, Minerals and Natural Resources Department

Form C-107-A  
New 3-12-96

OIL CONSERVATION DIVISION

APPROVAL PROCESS:

2040 S. Pacheco  
Santa Fe, New Mexico 87505-6429

Administrative  Hearing

EXISTING WELLBORE

YES  NO

APPLICATION FOR DOWNHOLE COMMINGLING

Operator Thompson Engineering & Production Corp. Address 7415 E. Main Farmington, New Mexico 87402

Lease Federal 11 Well No. #3 Unit Ltr. I Sec. 11 Twp. 28N Rge. 13W Spacing Unit Lease Types: (check 1 or more)

OGRID NO. 037581 Property Code 18115 API NO. 30-045-23291 Federal  State  (and/or) Fee

The following facts are submitted in support of downhole commingling:	Upper Zone	Intermediate Zone	Lower Zone
1. Pool Name and Pool Code	71629 Basin Fruitland Coal		W. Kutz Pictured Cliffs 79680
2. Top and Bottom of Pay Section (Perforations)	1609 - 1628		1641 -1645
3. Type of production (Oil or Gas)	Gas		Gas
4. Method of Production (Flowing or Artificial Lift)	Pumping		Pumping
5. Bottomhole Pressure Oil Zones - Artificial Lift: Gas & Oil - Flowing: All Gas Zones: Estimated Current Measured Current Estimated Or Measured Original	a. (Current) 175	a.	a. 180
	b. (Original) 175	b.	b. N/A
6. Oil Gravity (° API) or Gas BTU Content			
7. Producing or Shut-in?	Producing		Shut In
Production Marginal? (yes or no)	Yes		Yes
* If Shut-In, give date and oil/gas/water rates of last production <small>Note: For new zones with no production history, applicant shall be required to attach production estimates and supporting data</small>	Date: Rates:	Date: Rates:	Date: 9/96 Rates: 92 MCF/D 17 BWPD
* If Producing, give date and oil/gas/water rates of recent test (within 60 days)	Date: 11/96 Rates: 30 MCF/D 20 BWPD	Date: Rates:	Date: Rates:
8. Fixed Percentage Allocation Formula -% for each zone	Oil: % Gas: 39.1 %	Oil: % Gas: %	Oil: % Gas: 60.9 %

9. If allocation formula is based upon something other than current or past production, or is based upon some other method, submit attachments with supporting data and/or explaining method and providing rate projections or other required data.
10. Are all working, overriding, and royalty interests identical in all commingled zones?  Yes  No  
If not, have all working, overriding, and royalty interests been notified by certified mail?  Yes  No  
Have all offset operators been given written notice of the proposed downhole commingling?  Yes  No
11. Will cross-flow occur?  Yes  No If yes, are fluids compatible, will the formations not be damaged, will any cross-flowed production be recovered, and will the allocation formula be reliable.  Yes  No (If No, attach explanation)
12. Are all produced fluids from all commingled zones compatible with each other?  Yes  No
13. Will the value of production be decreased by commingling?  Yes  No (If Yes, attach explanation)
14. If this well is on, or communitized with, state or federal lands, either the Commissioner of Public Lands or the United States Bureau of Land Management has been notified in writing of this application.  Yes  No
15. NMOCD Reference Cases for Rule 303(D) Exceptions: ORDER NO(S) \_\_\_\_\_

16. ATTACHMENTS:

- \* C-102 for each zone to be commingled showing its spacing unit and acreage dedication.
- \* Production curve for each zone for at least one year. (If not available, attach explanation.)
- \* For zones with no production history, estimated production rates and supporting data.
- \* Data to support allocation method or formula.
- \* Notification list of all offset operators.
- \* Notification list of working, overriding, and royalty interests for uncommon interest cases.
- \* Any additional statements, data, or documents required to support commingling.

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

SIGNATURE Paul C. Thompson TITLE President DATE 12/2/96

TYPE OR PRINT NAME Paul C. Thompson TELEPHONE NO. ( 505 ) 327-4892

District I  
 PO Box 1900, Hobbs, NM 88241-1900  
 District II  
 PO Drawer DD, Artesia, NM 88211-0719  
 District III  
 1000 Rio Brazos Rd., Aztec, NM 87410  
 District IV  
 PO Box 2088, Santa Fe, NM 87504-2088

State of New Mexico  
 Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION  
 PO Box 2088  
 Santa Fe, NM 87504-2088

Form C-102  
 Revised February 10, 1994  
 Instructions on back  
 Submit to Appropriate District Office  
 State Lease - 4 Copies  
 Fee Lease - 3 Copies

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-045-23291		Pool Code 79680	Pool Name West Kutz Pictured Cliffs
Property Code 18115	Property Name Federal 11		Well Number 3
OGRID No. 037581	Operator Name Thompson Engr. & Prod. Corp.		Elevation 5896

10 Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	11	28N	13W		1465	FSL	1184	FEL	San Juan

11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

12 Deduct: Acres 137.78	13 Joint or Infill	14 Consolidation Code	15 Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

<p>16</p>	<p>17 OPERATOR CERTIFICATION</p> <p>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief</p> <p><i>Paul C. Thompson</i>          Signature</p> <p>Paul C. Thompson          Printed Name</p> <p>President          Title</p> <p>12/2/1996          Date</p>
	<p>18 SURVEYOR CERTIFICATION</p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>Date of Survey</p> <p>Signature and Seal of Professional Surveyor:</p> <p>Certificate Number</p>

District I  
 PO Box 1904, Hobbs, NM 88241-1904  
 District II  
 PO Drawer DD, Artesia, NM 88211-0719  
 District III  
 1000 Rio Bravo Rd., Aztec, NM 87410  
 District IV  
 PO Box 2088, Santa Fe, NM 87504-2088

State of New Mexico  
 Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION  
 PO Box 2088  
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Form C-102  
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 Submit to Appropriate District Office  
 State Lease - 4 Copies  
 Fee Lease - 3 Copies

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

* API Number 30-045-23291		* Pool Code	* Pool Name Basin Fruitland Coal
* Property Code 18115	* Property Name Federal 11		* Well Number 3
* OGRID No. 037581	* Operator Name Thompson Engr. & Prod. Corp.		* Elevation 5896

10 Surface Location

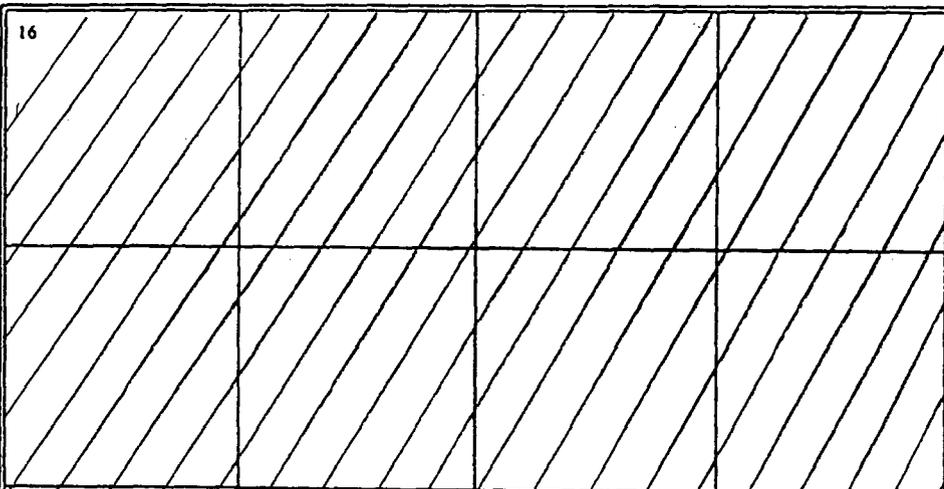
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	11	28N	13W		1465	FSL	1184	FEL	San Juan

11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

12 Dedication Acres 275.36	13 Joint or Infill	14 Consolidation Code	15 Order No.
-------------------------------	--------------------	-----------------------	--------------

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



17 OPERATOR CERTIFICATION

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

*Paul C. Thompson*  
 Signature

Paul C. Thompson  
 Printed Name

President  
 Title

12/2/1996  
 Date

18 SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

\_\_\_\_\_  
 Date of Survey

\_\_\_\_\_  
 Signature and Seal of Professional Surveyor

\_\_\_\_\_  
 Certificate Number

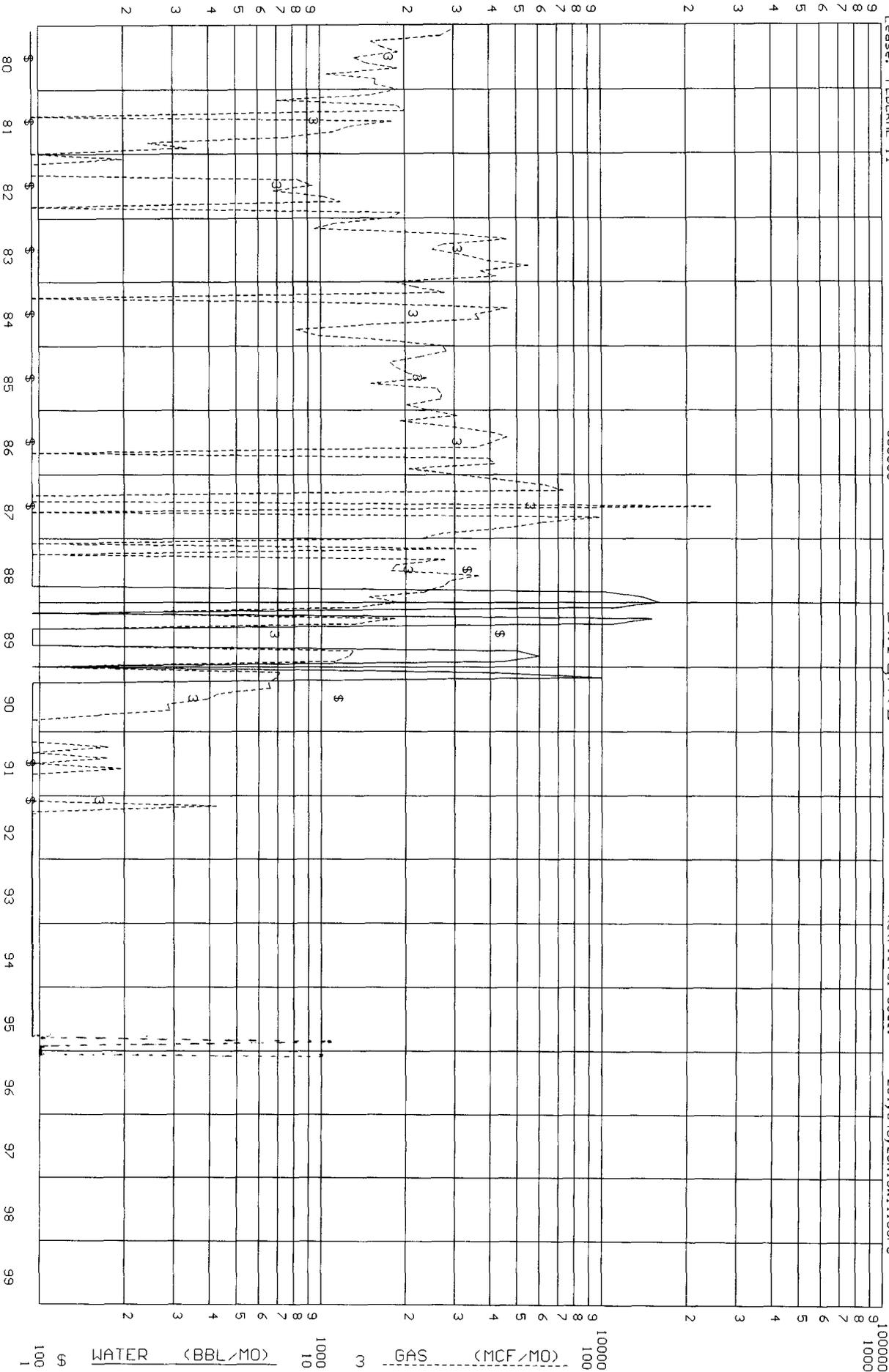
Lease: FEDERAL 11

000003

Dwights

Retrieval Code:

251,045,28N13M1100PC



County:	SAN JUAN	State:	NM
Field:	KUTZ WEST (PICTURED CLIFFS) PC		
Reservoir:	PICTURED CLIFFS		
Operator:	ABBOTT RALPH G		
Oil Cum:	0	Gas Cum:	276083
Location:	111 28N 13M		

F.P. Date 01-80

Date: 11-26-96

Federal 11 #3  
Commingling Application

Allocation Formula

The West Kutz Pictured Cliffs was completed by the previous operator, Ralph Abbott, on May 15, 1979. Due to water production and pump problems the Pictured Cliffs was produced erratically until Thompson purchased the well in January 1996. The decline curve is attached.

The Fruitland Coal has only recently been completed and there is insufficient data to determine a stabilized flow rate or decline curve.

Since both zones appear to only be capable of marginal production, Thompson Engineering proposes to downhole commingle the production.

Both zones have very similar bottom hole pressures (approximately 180 psig from the Pictured Cliffs and 175 psig from the Fruitland Coal) so cross flow will not be a factor. Both zones produce the same amount of water. Copies of water analysis are attached. Neither zone is fluid sensitive and the fluids from the two zones are compatible.

Since neither zone has enough data to prepare a reliable production forecast, Thompson Engineering proposes to allocate the production based on a ratio of the expected reserves. Average cumulative production from Pictured Cliffs wells in this area is 706,160 Mcf of gas while Fruitland Coal wells average 454,079 Mcf. **The proposed allocation is therefore 60.9% to the Pictured Cliffs and 39.1% to the Fruitland Coal.**

OFFSETS TO FEDERAL 11 #3  
SECTION 11, T28N R13W

WELL NAME	CUMULATIVE PRODUCTION MCF
<b>PICTURED CLIFFS WELLS</b>	
Gallegos Canyon Unit #287	119,645
Gallegos Canyon Unit #44	895,532
Gallegos Canyon Unit #66	828,168
Gallegos Canyon Unit #275	605,463
Gallegos Canyon Unit #5	1,939,508
Gallegos Canyon Unit #43	358,228
Gallegos Canyon Unit #321	241,415
Gallegos Canyon Unit #42	1,167,923
Phillips #1	341,815
Hagood #1	563,903
	=====
<b>AVERAGE</b>	<b>706,160</b>
<b>% of TOTAL PC PLUS FTC</b>	<b>60.9</b>

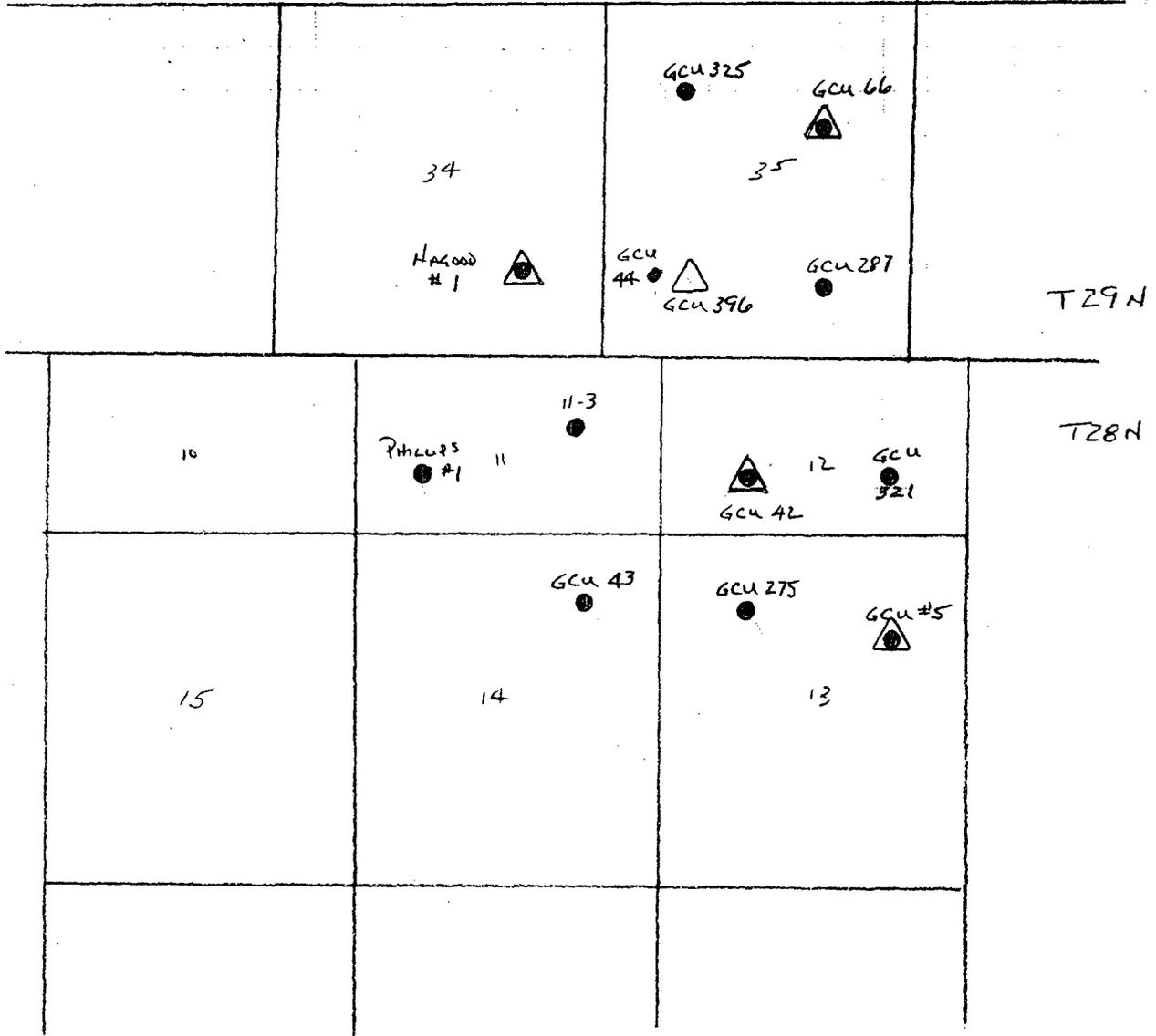
<b>FRUITLAND COAL WELLS</b>	
Gallegos Canyon Unit #396	489,563
Gallegos Canyon Unit #5	722,304
Gallegos Canyon Unit #42	143,492
Gallegos Canyon Unit #66	460,957
	=====
<b>AVERAGE</b>	<b>454,079</b>
<b>% of TOTAL PC PLUS FTC</b>	<b>39.1</b>

Northwest Pipeline Corporation

PLAT NO

DATE

R 13 W



THOMPSON ENGINEERING  
FEDERAL 11 #3 OFFSETS

- PICTURED CLIFFS
- △ FRUITLAND COAL

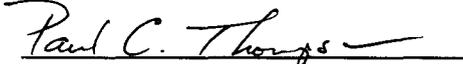
THOMPSON ENGINEERING & PRODUCTION CORP.  
Federal 11 #3  
1465' FSL & 1184' FEL  
Sec. 11, T28N, R13W  
San Juan County, New Mexico

The following offset property owners have received written notice of the proposed comingling application.

AMOCO PRODUCTION COMPANY  
San Juan Operations Center  
200 Amoco Court  
Farmington, New Mexico 87401

BURLINGTON OIL  
3535 E. 30th Street  
Farmington, New Mexico

I certify that this letter has been mailed to the above property owner.

  
Paul C. Thompson

San Juan County            )  
                                  )    ss  
State of New Mexico        )

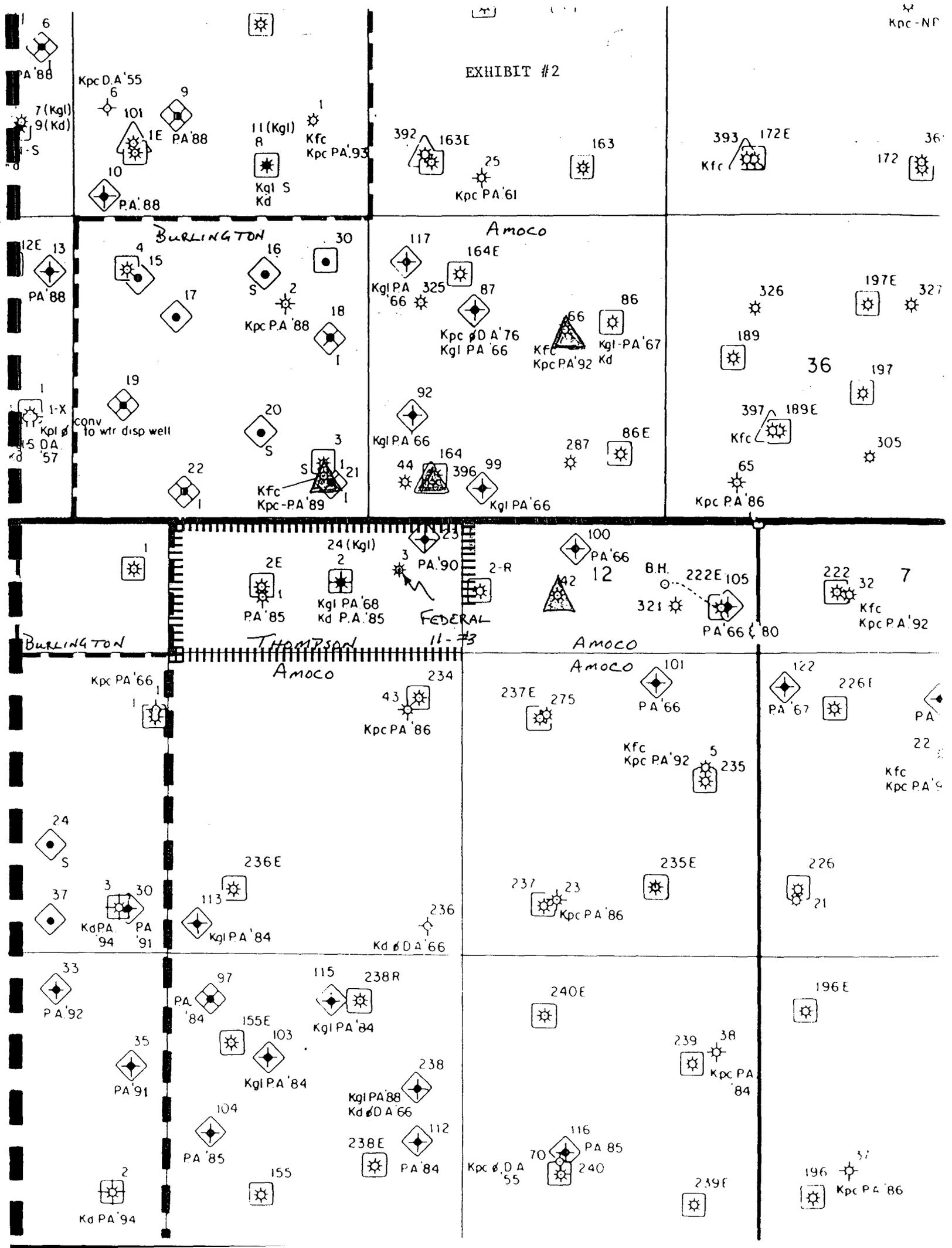
The following instrument was acknowledged before me this 6th day of December 1996 by Paul C. Thompson.

  
Notary Public

My Commission Expires:

July 31, 1997

EXHIBIT #2



6  
A'88  
Kpc D.A.'55  
7 (Kgl)  
9 (Kd)  
10  
PA'88  
11 (Kgl)  
R  
Kfc  
Kpc PA'93  
Kgl S  
Kd

392 163E  
163  
25  
Kpc PA'61

393 172E  
Kfc  
172  
36

BURLINGTON  
12E 13  
PA'88  
4 15  
16  
S  
2  
Kpc PA'88  
18  
1  
19  
1-X  
Kpl  
5 DA.  
57  
convt  
to wtr disp well  
20  
S  
21  
Kfc  
Kpc-PA'89  
22  
1

Amoco  
117  
164E  
Kgl PA'66  
325  
87  
Kpc D.A.'76  
Kgl PA'66  
Kfc  
Kpc PA'92  
Kd  
86  
Kgl-PA'67  
Kd  
92  
Kgl PA'66  
164  
396  
99  
Kgl PA'66  
287  
86E  
Kpc PA'86

326  
189  
36  
197  
397 189E  
Kfc  
65  
Kpc PA'86  
197E  
327  
197  
305

BURLINGTON  
1  
2E  
PA'85  
24 (Kgl)  
2  
Kgl PA'68  
Kd P.A.'85  
3  
PA'90  
FEDERAL  
11-73

Amoco  
100  
PA'66  
12  
B.H.  
222E 105  
321  
PA'66  
80

222 32 7  
Kfc  
Kpc PA'92

Amoco  
Kpc PA'66  
234  
43  
Kpc PA'86  
236E  
37  
30  
Kd PA'94  
PA'91  
113  
Kgl PA'84  
236  
Kd D.A.'66

Amoco  
237E 275  
101  
PA'66  
Kfc  
Kpc PA'92  
5  
235  
235E  
237  
23  
Kpc PA'86

122  
226E  
PA'67  
22  
Kfc  
Kpc PA'9  
226  
21

33  
PA'92  
35  
PA'91  
2  
Kd PA'94  
97  
PA'84  
155E  
103  
Kgl PA'84  
104  
PA'85  
155  
115 238R  
Kgl PA'84  
238  
Kgl PA'88  
Kd D.A.'66  
238E  
PA'84  
112

240E  
116  
PA'85  
70  
Kpc D.A.'55  
240  
239  
38  
Kpc PA'84  
239E

196E  
196  
Kpc PA'86  
37



**WALSH** ENGINEERING & PRODUCTION CORP.

Petroleum Engineering Consulting  
Lease Management  
Contract Pumping

7415 East Main  
Farmington, New Mexico 87402  
(505) 327-4892

CERTIFIED- RETURN RECEIPT

November 26, 1996

Mr. James Strickler  
Burlington Oil  
3535 E. 30th Street  
Farmington, NM 87401

Re: Application for Downhole Commingling  
Thompson Engineering  
Federal 11 #3  
1465' FSL, 1184' FEL, Section 11, T28N R13W  
San Juan County, New Mexico  
Basin Fruitland Coal and  
West Kutz Pictured Cliffs

Dear Mr. Strickler,

Enclosed you will find a copy of the above referred to application that has been submitted to the New Mexico Oil Conservation Division for administrative approval.

If you desire to submit remarks concerning the application, please send them to Mr. William J. LeMay, Director, New Mexico Oil Conservation Division, Santa Fe, New Mexico. A copy of any remarks to the undersigned would be appreciated.

Thank you for your consideration in this matter and if you have any questions, please do not hesitate to call upon me.

Sincerely,

Paul C. Thompson  
President, Thompson Engineering



**WALSH**

ENGINEERING & PRODUCTION CORP.

Petroleum Engineering Consulting  
Lease Management  
Contract Pumping

7415 East Main  
Farmington, New Mexico 87402  
(505) 327-4892

CERTIFIED- RETURN RECEIPT

November 26, 1996

Land Manager  
AMOCO Production Company  
200 AMOCO Court  
Farmington, NM 87401

Re: Application for Downhole Commingling  
Thompson Engineering  
Federal 11 #3  
1465' FSL, 1184' FEL, Section 11, T28N R13W  
San Juan County, New Mexico  
Basin Fruitland Coal and  
West Kutz Pictured Cliffs

Dear Land Manager,

Enclosed you will find a copy of the above referred to application that has been submitted to the New Mexico Oil Conservation Division for administrative approval.

If you desire to submit remarks concerning the application, please send them to Mr. William J. LeMay, Director, New Mexico Oil Conservation Division, Santa Fe, New Mexico. A copy of any remarks to the undersigned would be appreciated.

Thank you for your consideration in this matter and if you have any questions, please do not hesitate to call upon me.

Sincerely,

Paul C. Thompson  
President, Thompson Engineering

THOMPSON ENGINEERING & PRODUCTION CORP.  
**Federal 11 #3**  
1465' FSL & 1184' FEL  
Sec. 11, T28N, R13W  
San Juan County, New Mexico

The following working interest, royalty and overriding royalty owners have received written notice of the proposed comingling application.

U.S. GOVERNMENT  
c/o BUREAU OF LAND MANAGEMENT  
1235 La Plata Highway  
Farmington, New Mexico 87401

MERRION OIL & GAS COMPANY  
610 Reilly Avenue  
Farmington, New Mexico 87401

COLEMAN OIL & GAS COMPANY  
708 S. Tucker  
Farmington, New Mexico 87401

GEORGE E. COLEMAN  
708 S. Tucker  
Farmington, New Mexico

I certify that this letter has been mailed to the above property owners.

  
\_\_\_\_\_  
Paul C. Thompson

San Juan County                    )  
  )    ss  
State of New Mexico            )

The following instrument was acknowledged before me on this 6th  
day of December 1996 by Paul C. Thompson.

  
\_\_\_\_\_  
Notary Public

My Commission Expires:  
July 31, 1997

**Federal 11 #3  
Commingling Application**

**Working, Overriding, and Royalty Interests**

**Pictured Cliffs**

<b>Owner</b>	<b>Working Interest</b>	<b>Net Revenue Interest</b>
U.S Government		0.125
Coleman Oil and Gas	0.90	0.747
Paul Thompson	0.10	0.083
Merrion Oil and Gas		0.010
George E. Coleman		0.350
	1.00	1.000

**Fruitland Coal**

<b>Owner</b>	<b>Working Interest</b>	<b>Net Revenue Interest</b>
U.S Government		0.12500
Coleman Oil and Gas	0.90	0.74324
Paul Thompson	0.10	0.08258
Merrion Oil and Gas		0.01418
George E. Coleman		0.35000
	1.00	1.00000



**WALSH** ENGINEERING & PRODUCTION CORP.

Petroleum Engineering Consulting  
Lease Management  
Contract Pumping

7415 East Main  
Farmington, New Mexico 87402  
(505) 327-4892

CERTIFIED- RETURN RECEIPT

December 2, 1996

Mr. T. Greg Merrion  
Merrion Oil and Gas  
610 Reilly Avenue  
Farmington, NM 87401

Re: Application for Downhole Commingling  
Thompson Engineering  
Federal 11 #3  
1465' FSL, 1184' FEL, Section 11, T28N R13W  
San Juan County, New Mexico  
Basin Fruitland Coal and  
West Kutz Pictured Cliffs

Dear Mr. Merrion,

As an overriding royalty owner of this well you are being notified of the above referred to application that has been submitted to the New Mexico Oil Conservation Division for administrative approval.

If you desire to submit remarks concerning the application, please send them to Mr. William J. LeMay, Director, New Mexico Oil Conservation Division, Santa Fe, New Mexico. A copy of any remarks to the undersigned would be appreciated.

Please do not hesitate to call upon me if you have any questions.

Sincerely,

Paul C. Thompson  
President, Thompson Engineering



**WALSH** ENGINEERING & PRODUCTION CORP.

Petroleum Engineering Consulting  
Lease Management  
Contract Pumping

7415 East Main  
Farmington, New Mexico 87402  
(505) 327-4892

CERTIFIED- RETURN RECEIPT

December 2, 1996

Mr. George E. Coleman  
c/o Coleman Oil and Gas  
P.O. Drawer 3337  
Farmington, NM 87499

Re: Application for Downhole Commingling  
Thompson Engineering  
Federal 11 #3  
1465' FSL, 1184' FEL, Section 11, T28N R13W  
San Juan County, New Mexico  
Basin Fruitland Coal and  
West Kutz Pictured Cliffs

Dear Mr. Coleman,

As a working interest owner of this well you are being notified of the above referred to application that has been submitted to the New Mexico Oil Conservation Division for administrative approval.

If you desire to submit remarks concerning the application, please send them to Mr. William J. LeMay, Director, New Mexico Oil Conservation Division, Santa Fe, New Mexico. A copy of any remarks to the undersigned would be appreciated.

Please do not hesitate to call upon me if you have any questions.

Sincerely,

Paul C. Thompson  
President, Thompson Engineering



**WALSH** ENGINEERING & PRODUCTION CORP.

Petroleum Engineering Consulting  
Lease Management  
Contract Pumping

7415 East Main  
Farmington, New Mexico 87402  
(505) 327-4892

CERTIFIED- RETURN RECEIPT

December 2, 1996

Mr. George E. Coleman  
Coleman Oil and Gas  
P.O Drawer 3337  
Farmington, NM 87499

Re: Application for Downhole Commingling  
Thompson Engineering  
Federal 11 #3  
1465' FSL, 1184' FEL, Section 11, T28N R13W  
San Juan County, New Mexico  
Basin Fruitland Coal and  
West Kutz Pictured Cliffs

Dear Mr. Coleman,

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Please do not hesitate to call upon me if you have any questions.

Sincerely,

Paul C. Thompson  
President, Thompson Engineering

PJ

**BJ SERVICES COMPANY**  
**WATER ANALYSIS #FW01W046**  
**FARMINGTON LAB**

**GENERAL INFORMATION**

OPERATOR: THOMPSON ENG.	DEPTH:
WELL: FED. 11-3	DATE SAMPLED:
FIELD:	DATE RECEIVED: 10/17/96
SUBMITTED BY: PAUL THOMPSON	COUNTY: STATE: NM
WORKED BY : D. SHEPHERD	FORMATION: PICTURED CLIFFS
PHONE NUMBER:	

**SAMPLE DESCRIPTION**

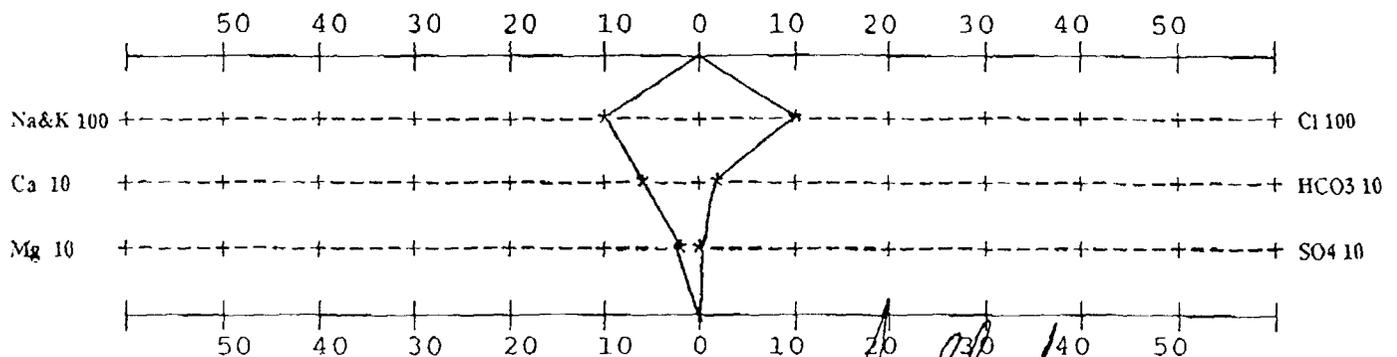
SAMPLE FOR ANALYSIS

**PHYSICAL AND CHEMICAL DETERMINATIONS**

SPECIFIC GRAVITY:	1.040	@ 78°F	PH:	7.27
RESISTIVITY (MEASURED ):	0.100	ohms @ 75°F		
IRON (FE++) :	3 ppm	SULFATE:		0 ppm
CALCIUM:	1,232 ppm	TOTAL HARDNESS		3,791 ppm
MAGNESIUM:	173 ppm	BICARBONATE:		798 ppm
CHLORIDE:	35,112 ppm	SODIUM CHLORIDE (Calc)		57,759 ppm
SODIUM+POTASS:	21,324 ppm	TOT. DISSOLVED SOLIDS:		61,025 ppm
H2S: NO TRACE		POTASSIUM PPM:		73

**REMARKS**

**STIFF TYPE PLOT (IN MEQ/L)**



ANALYST

*D. Shepherd*  
D. SHEPHERD

**BJ SERVICES COMPANY**

**WATER ANALYSIS #FW01W076**

**FARMINGTON LAB**

**GENERAL INFORMATION**

OPERATOR:	THOMPSON ENG.	DEPTH:	
WELL:	FEDERAL 11 #3	DATE SAMPLED:	12/02/96
FIELD:		DATE RECEIVED:	12/02/96
SUBMITTED BY:		COUNTY:	STATE:
WORKED BY:	MIKE KHACHATRIAN	FORMATION:	FRUITLAND COAL
PHONE NUMBER:			

**SAMPLE DESCRIPTION**

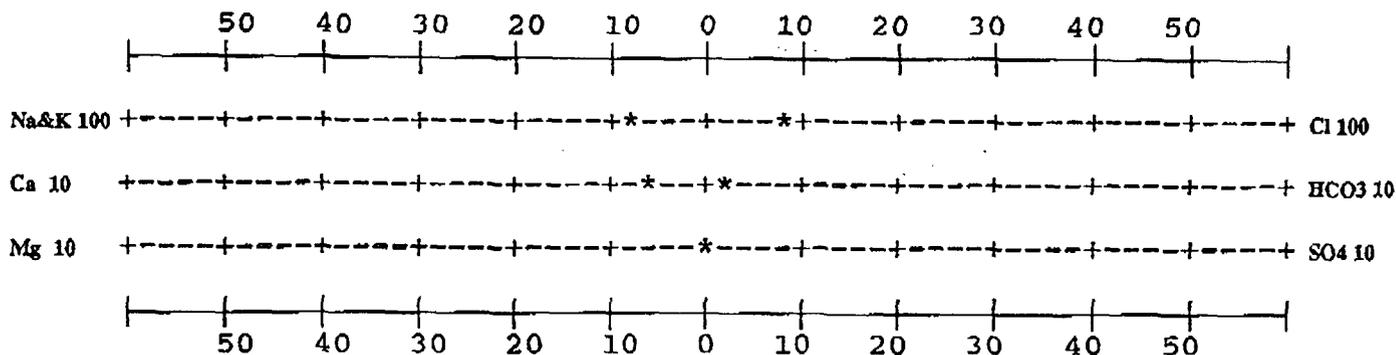
SAMPLE FOR ANALYSIS

**PHYSICAL AND CHEMICAL DETERMINATIONS**

SPECIFIC GRAVITY:	1.040	@ 64°F	PH:	6.80
RESISTIVITY (MEASURED ):	0.100	ohms @ 64°F		
IRON (FE++) :	3	ppm	SULFATE:	5
CALCIUM:	1,174	ppm	TOTAL HARDNESS	3,194
MAGNESIUM:	63	ppm	BICARBONATE:	1,642
CHLORIDE:	30,169	ppm	SODIUM CHLORIDE(Calc)	49,628
SODIUM+POTASS:	18,714	ppm	TOT. DISSOLVED SOLIDS:	53,725
H2S: NO TRACE			POTASSIUM PPM:	75

**REMARKS**

**STIFF TYPE PLOT (IN MEQ/L)**



ANALYST

MIKE KHACHATRIAN

RUTH W WALSH ENG.

505 327 4892

REPORT NO: CGME7A7 -01  
Page No: 2

E L P A S O N A T U R A L G A S C O M P A N Y  
Volume Calculation & Distribution Department  
Monthly volume and Analysis for December, 1995

Report Date: 12/03/96  
Report Time: 12:18:24

Meter: 90624 - FEDERAL 11 #3 *PICTURED CLIFF*  
Oper: 0523 - THOMPSON ENGINEERING & PROD

Reporting party:	- *** No Reporting Party ***													
Mole % / GPM	C2	C3	IC4	NC4	ICS	NC5	C6P	BTU	Spec Grav	GPM				
Effective	0.640	0.000	0.390	93.480	4.800	0.420	0.080	0.090	0.030	0.020	0.050	1055	0.595	1.494
12/01/95	0.000	0.000	0.000	0.000	1.284	0.116	0.026	0.028	0.011	0.007	0.022			



1115 Farmington Avenue  
 Farmington, N.M. 87401  
 (505) 325-6622

Analysis No. TOG60004  
 Cust. No. 77000-10035

WELL/LEASE INFORMATION

Company	: THOMPSON ENG & PROD	Source	:
Well Name	: FEDERAL 11 #3	Pressure	: 55 PSIG
County	: SAN JUAN	Sample Temp.	: 47 DEG.F
State	: NM	Well Flowing	: YES
Location	: 11-28N-13W	Date Sampled	: 11/29/96
Fld/Formation	: FRUITLAND COAL	Sampled By	: PAUL THOMPSON
Cust.Stn.No.	:	Foreman/Engr	:

Remarks:

ANALYSIS

COMPONENT	MOLE %	GPM**	B.T.U.*	SP.GR.*
NITROGEN	2.466	0.0000	0.00	0.0239
CO2	0.606	0.0000	0.00	0.0092
METHANE	91.658	0.0000	927.85	0.5077
ETHANE	3.127	0.8365	55.46	0.0325
PROPANE	1.189	0.3277	29.99	0.0181
I-BUTANE	0.237	0.0775	7.72	0.0048
N-BUTANE	0.292	0.0921	9.55	0.0059
I-PENTANE	0.119	0.0435	4.77	0.0030
N-PENTANE	0.073	0.0264	2.93	0.0018
HEXANES	0.233	0.1016	11.98	0.0075
TOTAL	100.000	1.5053	1050.26	0.6144

\* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY

\*\* @ 14.730 & 60 DEG. F

COMPRESSIBILITY FACTOR	(1/Z)	1.0023
BTU/CU.FT. (DRY) CORRECTED FOR	(1/Z)	1052.7
BTU/CU.FT. (WET) CORRECTED FOR	(1/Z)	1034.4
REAL SPECIFIC GRAVITY		0.6156

ANALYSIS RUN AT 14.730 PSIA & 60 DEGREES F

CYLINDER #	:	026
CYLINDER PRESSURE	:	42 PSIG
DATE RUN	:	12/02/96
ANALYSIS RUN BY	:	CHELLE DURBIN