12/19/96	1/3/97	BS	KW	SWD

ABOVE THIS LINE FOR DIVISION USE ONLY

651

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.

Michael G. Hanagan		Geologist	12/16/96
Print or Type Name	Signature	Title	Date

marbob
energy corporation

12/17/96

Oil Conservation Division
New Mexico Energy and Minerals Department
2040 South Pacheco Street
Santa Fe, New Mexico 87501

Attention: Mr. Ben Stone

RE: WATER DISPOSAL WELL APPLICATION
Marbob Energy Corporation
#2 Long Arroyo
Section 33-T12S-R28E
1980' FSL & 2310' FWL
Chaves County, New Mexico

Dear Mr. Stone:

Please find herewith, in triplicate, the application of Marbob Energy Corporation for authority to convert the above referenced well to a water disposal well.

Application is made pursuant to NMOCD Rule 701-D for Administrative Approval for disposal into the Siluro-Devonian formation.

Publication of Marbob's intent to utilize the above referenced well for water disposal has been made in the Roswell Daily Record, and copies of this application have been furnished to both the surface and mineral owners within 1/2 mile of the well. Other than Marbob, there is no other leasehold operator or oil and gas lessee within the 1/2 mile radius.

Your prompt approval of this application will be greatly appreciated. Should you have any questions or comments please give me a call at 623-5053 or Raye Miller a call at 748-3303.

Sincerely,

MARBOB ENERGY CORPORATION

Mike Hanagan

P.O. Box 227 Artesia, New Mexico 88211-0217 (505) 748-3303 Fax (505) 746-2523

BEFORE THE NEW MEXICO OIL CONSERVATION DIVISION
APPLICATION FOR ADMINISTRATIVE APPROVAL
MARBOB ENERGY CORPORATION
FOR CONVERSION TO WATER DISPOSAL
THE
LONG ARROYO WELL #2

Located 1980' FSL and 2310' FWL, Section 33-T12S-R28E
Chaves County, New Mexico

TABLE OF CONTENTS

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501

FORM C-108
Revised 7-1-81

APPLICATION FOR AUTHORIZATION TO INJECT

I. Purpose: ☐ Secondary Recovery ☐ Pressure Maintenance ☒ Disposal ☐ Storage
Application qualifies for administrative approval? ☐ yes ☐ no

II. Operator: Marbob Energy Corporation

Address: P.O. Box 227, Artesia, NM 88211-0227

Contact party: Mike Hanagan/Raye Miller Phone: 623-5053/748-3303

III. Well data: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? ☐ yes ☐ no
If yes, give the Division order number authorizing the project _____.

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

* VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such source known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

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

* XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

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

XIV. Certification

I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: Michael E. Hanagan Title Geologist

Signature: _____ Date: 12/16/96

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be duplicated and resubmitted. Please show the date and circumstance of the earlier submittal. _____

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate Division district office.

III. WELL DATA

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

(1) Lease name; Well No.; location by Section, Township, and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

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

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

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

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

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

(1) The name, address, phone number, and contact party for the applicant;

(2) the intended purpose of the injection well; with the exact location of single wells or the section, township, and range location of multiple wells;

(3) the formation name and depth with expected maximum injection rates and pressures; and

(4) a notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, P. O. Box 2088, Santa Fe, New Mexico 87501 within 15 days.

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

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

FORM C-108 - ITEM III
INJECTION WELL DATA SHEET

A.

(1) Marbob Energy Corporation
Long Arroyo Well #2
Section 33-T12S-R28S
1980' FSL & 2310' FWL

(2) (a) 8.625" casing set @ 1900' in 12.25" hole, cemented w/1355sx, circulated cement to surface.
(b) 5.5" casing set @ 8367' in 7.875" hole, cemented w/325 sacks cement, top of cement @ 6830' as determined by temperature survey.

(3) Will run 2.875" tubing with plastic coating to 8150'KB.

(4) Will set a Guiberson Ini VI model packer at 8150'KB

B.

(1) The injection formation will be the Siluro-Devonian.

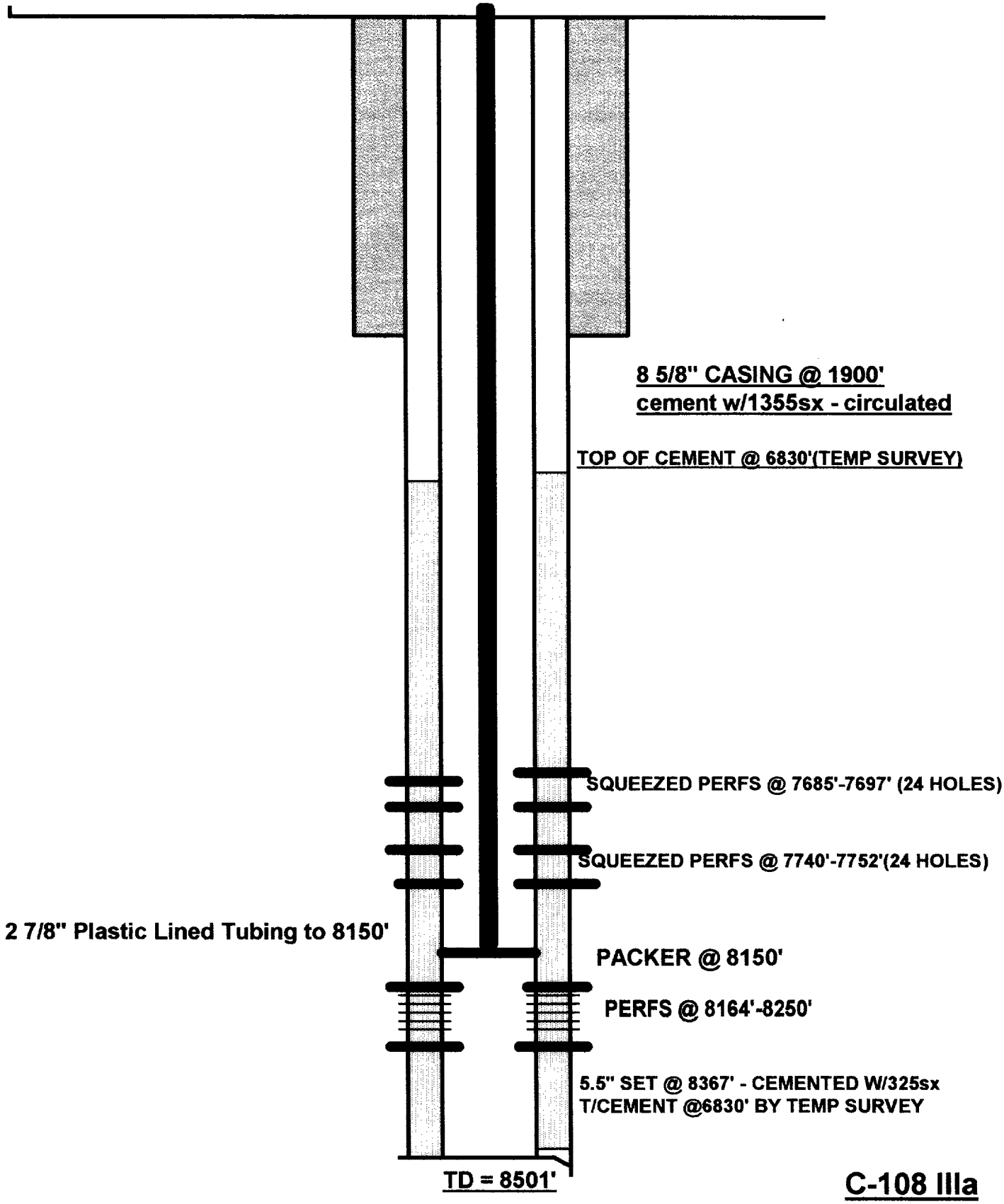
(2) The well will be perforated from 8164' to 8250'

(3) The well was originally completed as a gas well from the Mississippian formation.

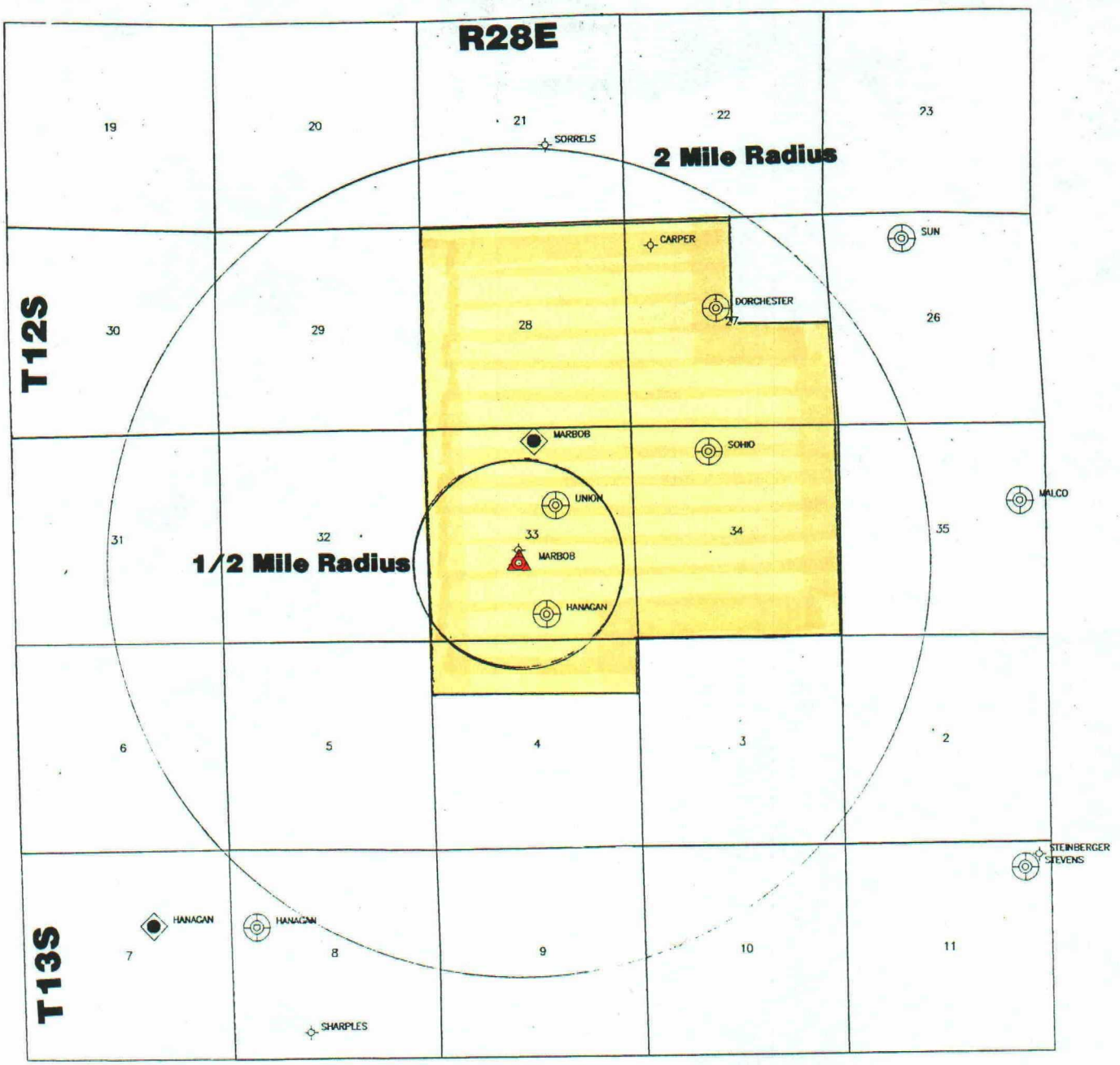
(4) (a) The well was initially perforated from 8164'-8174' (Siluro-Devonian) but tested high water rates with low oil cuts. The zone was isolated with a cast iron bridge plug set at 8110' with 35' of cement spotted on top of the plug. These perforations would be the top of the disposal interval after drilling out the bridge plug.
(b) The well is presently completed as a shut-in gas well from the following perforations in the Mississippian Formation:
7685' - 7697' (12') w/24 holes
7740' - 7752' (12') w/24 holes
These perforations will be squeezed off prior to the conversion of this well to a disposal well.

(5) The Siluro-Devonian Formation is productive in the Marbob Energy Ramos-Fee #1 well located 2970' (0.5625 miles) north of this well. The Mississippian formation interval described above in item (4) is the only other productive horizon within 2 miles of this well.

Marbob Energy Long Arroyo #2
Well Schematic (Proposed)
C-108 IIIa



C-108 IIIa



Kaywal, Inc. is the Mineral Owner of the entire area within the 2 mile area of review

Ramos Cattle Co. is the Surface Owner of the entire area within the 2 mile area of review

Marbob Energy is the Oil & Gas Lessee in the area shown in yellow

Marbob Energy Corporation		
Long Arroyo #2 Disposal Application Exhibit C-108 VI Wells & Leases in Area of Review		
M. Hanagan		December, 1996
	1" = 4,000'	

FORM C-108 - ITEM VI

Area Well Data Sheet

Dorchester Exploration #1 Hill (orig. Union of Cal. #1 Waller)
Originally drilled/P&A in 1959, re-entered/P&A in1981
Sec. 27-T12S-R28E: 2310' FNL & 2310' FWL
TD 8360'
8 5/8" casing @ 1910', cemented w/600sx
See attached C-108 VIa for wellbore schematic

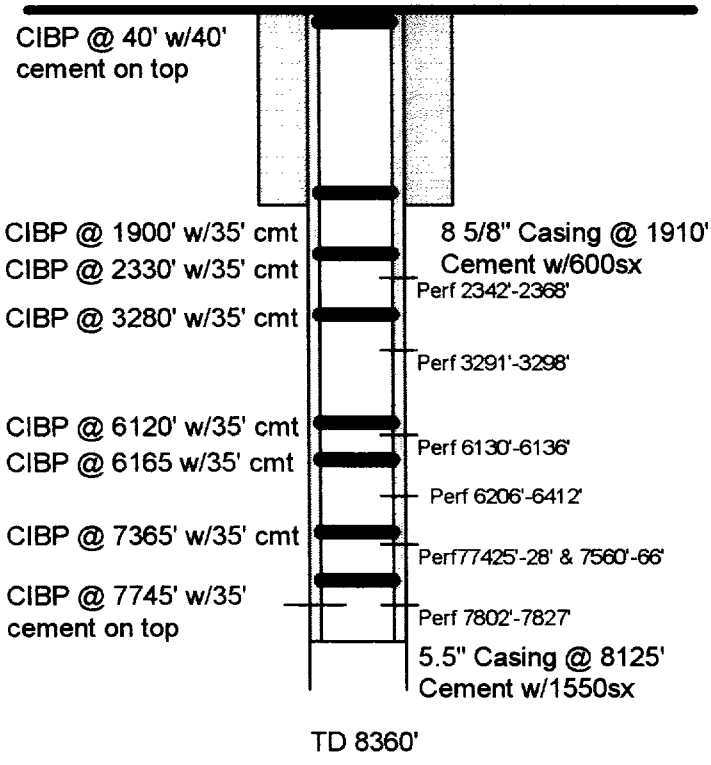
Hanagan Petroleum Corporation #1 Long Arroyo
Drilled/P&A in 1988
Section 33-T12S-R28E: 660' FSL & 2310' FEL
TD 8235'
8 5/8" casing @ 1600', cemented w/1400sx-circulated
See attached C-108 VIb for wellbore schematic

Union Oil Co. of California #1 Waller
Drilled/P&A 1968
Section 33-T12S-R28E: 1980' FNL & 1980' FEL
TD 8235'
8 5/8" casing @ 1900, cemented w/1350sx-circulated
See attached C-108 VIc for wellbore schematic

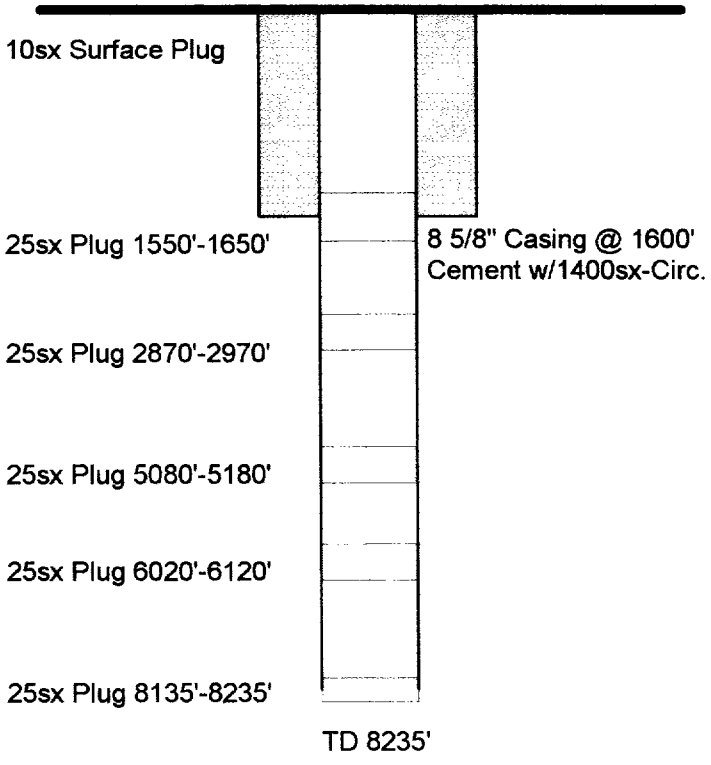
Marbob Energy Corporation #1 Ramos-Fee
Drilled/Completed as Siluro-Devonian Oil Well in 1996
Section 33-T12S-R28E: 330' FNL &
TD 8188'
13 3/8" casing @ 311', cemented w/350sx-circulated
8 5/8" casing @ 1630', cemented w/1450sx-circulated
5 1/2" casing @ 8188', cemented w/1700sx-circulated
Completion Interval: Open Hole Completion 8169'-8188' (Siluro-Devonian)

Sohio Petroleum Company #1 WF Waller
Drilled/P&A in 1957
Section 34-T12S-R28E: 660' FNL & 1980' FWL
TD 8290'
13 3/8" casing @ 112', cement w/125sx-circulated
8 5/8" casing @ 2140', cement not reported on scout ticket
See attached C-108 VId for well bore schematic

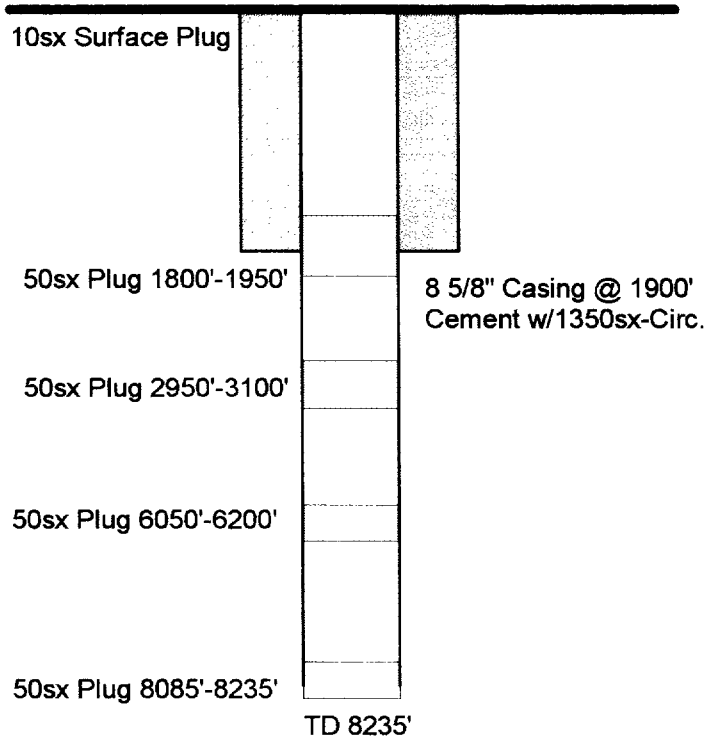
C-108 VIa
Dorchester #1 Hill
Well Schematic



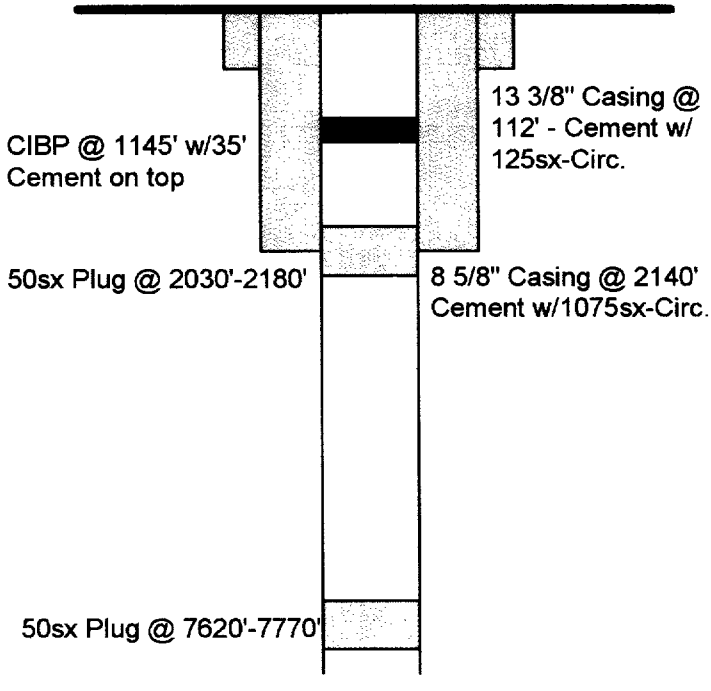
C-108 VIb
Hanagan #1 Long Arroyo
Well Schematic



C-108 VIc
Union Of Cal. #1 Waller
Well Schematic



C-108 VId
Sohio #1 WF Waller
Well Schematic



FORM C-108 VII

DATA SHEET

1. **Proposed Rate of Injection**
   - A. Estimated average daily rate of injection: 5,000 barrels
   - B. Maximum daily rate of injection: 10,000 barrels

2. **Type of System**
   System will be closed

3. **Anticipated Injection Pressure**
   It is anticipated that the injection pressure will nominal, if not on a vacuum, but in no event would the pressure exceed 0.20 psi per foot of depth to the top of the injection zone (1630 psi).

4. **Source of Injection Water**
   The source of the disposal water will be from the Siluro-Devonian Formation from wells located in section 33-T12S-R28E (0.56 miles north) and in section 7-T13S-R28E (3 miles southwest). As both of these wells are from the same formation as the disposal well the fluid should be compatible. See C-108 VIIa and C-108VIIb for analysis of disposal water.

5. **Disposal Zone Water Analysis**

   Disposal will be into a zone which is productive within one-half mile of the proposed well. The Marbob Energy Corporation #1 Ramos well is located 0.56 miles north-northeast of the proposed disposal well and the Ramos #1 produces oil and water from the Siluro-Devonian formation, which is the same as disposal formation. However, based on 3D seismic information, the two wells are located on separate features thus preventing any communication between the disposal well and the producing well. Please see C-108 VIIIc, which is a copy of the 3D seismic survey showing the separation.
   The attached C-108 VIIc is a water analysis from the proposed disposal interval in the proposed well. Also find attached C-108 VIId which is a comparison of the disposal waters and the formation water in the disposal interval. This comparison shows virtually no difference in the composition of the disposal water and the formation water in the disposal interval.

HALLIBURTON ENERGY SERVICES

WATER ANALYSIS

Artesia, NM LAB	ANALYSIS #: ATO10037

GENERAL INFORMATION

OPERATOR:	Marbob Energy	DEPTH:	
WELL:	Ramos Fee # 1	DATE SAMPLED:	10/22/96
FIELD:		DATE RECEIVED:	10/23/96
FORMATION:		SUBMITTED BY:	John Gray
COUNTY:		WORKED BY:	Mike Hill
STATE:		PHONE #:	(505) 746-2757

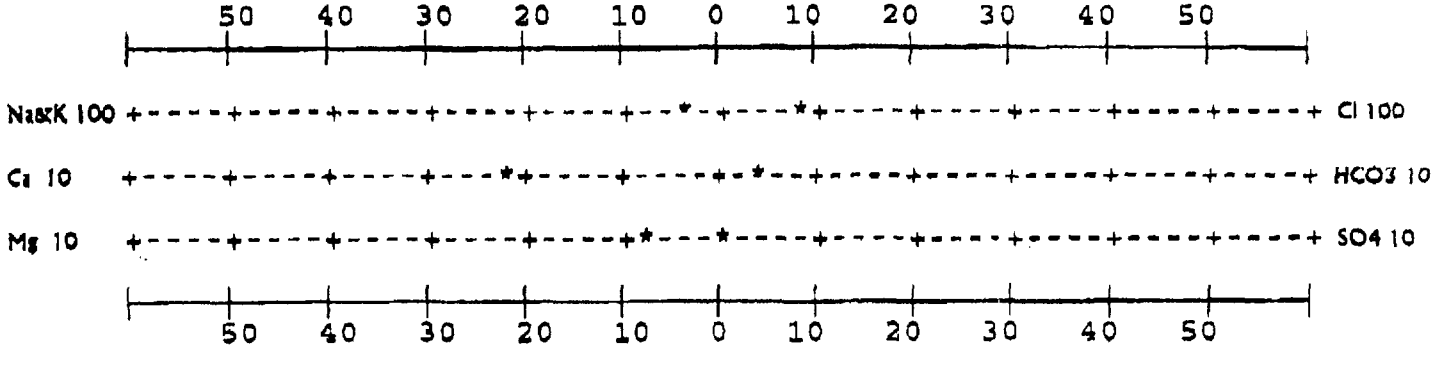
SAMPLE DESCRIPTION:

PHYSICAL AND CHEMICAL DETERMINATIONS

SPECIFIC GRAVITY:	1.030 @ 70 °F	PH:	7.2
RESISTIVITY (CALC.):	.115 OHMS @ 75 °F		
IRON (FE++):	3 PPM	SULFATE:	194 PPM
CALCIUM:	4350 PPM	TOTAL HARDNESS:	14660 PPM
MAGNESIUM:	920 PPM	BICARBONATE:	1925 PPM
CHLORIDE:	26208 PPM	SODIUM CHLORIDE (CALC)	43112 PPM
SODIUM+POTASS:	11086 PPM	TOT. DISSOLVED SOLIDS:	54073 PPM

REMARKS:

STIFF TYPE PLOT (IN MEQ/L)



ANALYST Mike Hill

HALLIBURTON ENERGY SERVICES

WATER ANALYSIS

Artesia, NM LAB	ANALYSIS #: ATO10037

GENERAL INFORMATION

OPERATOR:	Marbob Energy	DEPTH:	
WELL:	Charlie St # 1	DATE SAMPLED:	10/22/96
FIELD:		DATE RECEIVED:	10/23/96
FORMATION:		SUBMITTED BY:	John Gray
COUNTY:		WORKED BY:	Mike Hill
STATE:		PHONE #:	(505) 746-2757

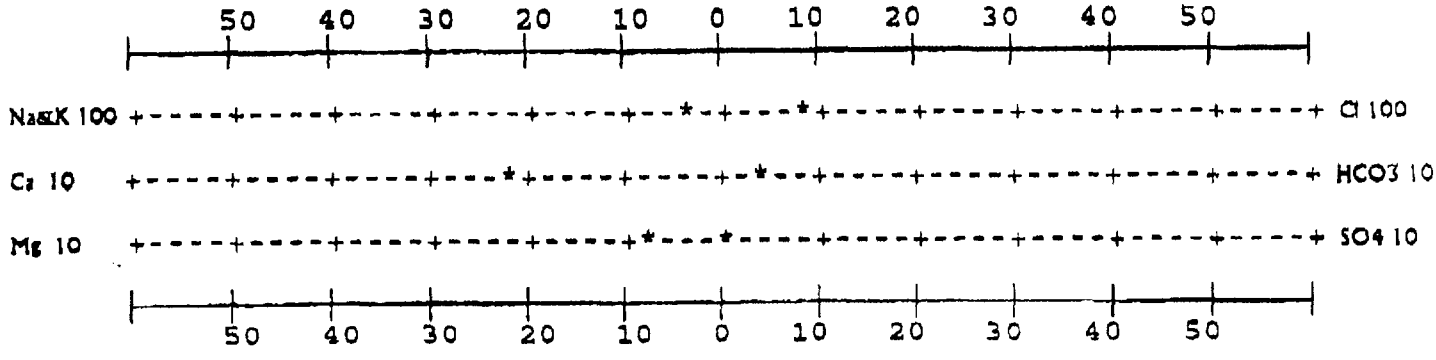
SAMPLE DESCRIPTION: 25% Emulsion, Most Likely Due to Iron Content

PHYSICAL AND CHEMICAL DETERMINATIONS

SPECIFIC GRAVITY:	1.025 @ 70 °F	PH:	7.2
RESISTIVITY (CALC.):	.115 OHMS @ 75 °F		
IRON (FE++):	25 PPM	SULFATE:	390 PPM
CALCIUM:	4488 PPM	TOTAL HARDNESS:	15122 PPM
MAGNESIUM:	948 PPM	BICARBONATE:	1934 PPM
CHLORIDE:	25360 PPM	SODIUM CHLORIDE (CALC)	41717 PPM
SODIUM+POTASS:	10421 PPM	TOT. DISSOLVED SOLIDS:	53228 PPM

REMARKS:

STIFF TYPE PLOT (IN MEQ/L)



ANALYST Mike Hill

HALLIBURTON DIVISION LABORATORY

HALLIBURTON SERVICES

ARTESIA DISTRICT

LABORATORY REPORT

No. W146-89

TO Hanagan Petroleum

P. O. Box 1737

Roswell, NM 88201

Date May 1, 1989

Submitted by _____ **Date Rec.** April 28, 1989

Well No. Long Arroyo #2 **Depth** _____ **Formation** _____

Field _____ **County** _____ **Source** Swab

Resistivity	.195 @ 60°		
Specific Gravity ..	1.025 @ 60°		
pH	7.0		
Calcium	3,800		
Magnesium	800		
Chlorides	22,000		
Sulfates	1,600		
Bicarbonates	900		
Soluble Iron	150		

Remarks:

Art Carrasco Devonian

C-108 VII&c

Respectfully submitted

Analyst: Art Carrasco - District Engineer

HALLIBURTON SERVICES

FORM C-108 VIId

Water Comparison Table

	Long Arroyo #2	Ramos #1	Charlie St. #1
Resistivity	**.195@60**	**.115@75**	**.115@75**
Specific Gravity	**1.025@60**	**1.030@75**	**1.025@75**
pH	**7.0**	**7.2**	**7.5**
Calcium	**3800ppm**	**4350ppm**	**4488ppm**
Magnesium	**800ppm**	**920ppm**	**948ppm**
Chlorides	**22000ppm**	**26208ppm**	**25360ppm**
Sulfates	**1600ppm**	**194ppm**	**390ppm**
Bicarbonates	**900ppm**	**1925ppm**	**1934ppm**

FORM C-108 - ITEM VIII

Geological Data

GEOLOGIC DESCRIPTION OF INJECTION INTERVAL

Produced waters will be disposed of into the Siluro-Devonian Formation through perforations from 8164' to 8250' (86'). Six well have drilled into the top of the Siluro-Devonian in the two mile radius of investigation; However, only one well (the proposed disposal well) has penetrated the formation more than 10'-20'. The proposed disposal well was drilled into what is probably the Ellenburger formation. It is very difficult to differentiate the lower Paleozoic section (Siluro-Devonian through Cambrian) in this area due to the very limited number of penetrations combined with the fact that the section consists almost entirely of dolomites with only minor lithologic changes in the dolomites in the various portions of the section. Due to these difficulties, there has been no attempt to delineate the thickness of the Siluro-Devonian formation in the proposed disposal well. The disposal interval thickness will consist of the uppermost 86' of the Siluro-Devonian Formation. Lithologically, the disposal interval is primarily comprised of fractured, white-tan, microcrystalline dolomite which has very little matrix porosity but has high permeability due to the fractured nature of the reservoir.

C-108 Item VIIIa is a structure map on the top of the Siluro-Devonian formation. The most obvious features on this map is the presence of two structural highs bounded by a down-to-the-west fault. The fault trends northeast to southwest and the timing of the faulting is late Mississippian age to early Pennsylvanian age. There is no indication of the faulting extending beyond early Pennsylvanian time. This is evidenced by thickening within the Atoka and Strawn intervals on well located lower down on the structures (i.e., the "fill" interval after faulting is primarily during Atoka time). In addition, there is no evidence, either seismically or by subsurface observations, of any recurrent movement along this fault that might suggest that the fault is "open" or "leaky" but to the contrary, the fault appears to be a "sealing" fault. The Charlie State#1 well is located on the southwestern feature in section 7-T13S-R28E. The proposed disposal well is located on the center structure (S/2 of section 33) and the Ramos-Fee #1 is located on the northern feature in the N/2 of section 33. C-108 Item VIIIc is a structure map on the top of the Mississippian formation which is the deepest formation that can be reliably mapped from seismic data. This map also shows each feature and the separation between each of the features. Based on the considerable amount of information which indicates that each of these features are separate and isolated features, it is highly unlikely that there will be any communication between the disposal well and the other structural highs shown on these maps.

C-108 VIIIb is a northeast to southwest structural cross-section showing the lower Pennsylvanian to Upper Siluro-Devonian formations. This cross-section is a strike section. The Siluro-Devonian (disposal interval) is located near the bottom of the cross-section and is shaded on the cross-section. The cross-section supports separation between the Ramos

feature (N/2 of sect. 33) and the Long Arroyo 2 (S/2 of sect. 33). As there are no wells located on the down-thrown side of the fault, no west to east cross-section has been attached to this Application.

UNDERGROUND FRESH WATER SOURCES

The proposed disposal well lies with the extended Roswell Underground Water Basin. A search of the records at the State Engineers office in Roswell indicated that the nearest declared water well is located almost three (3) miles northwest of the proposed disposal well in section 15-T12S-R28E. No other information for the immediate area was available from the State Engineers office. However, a physical search of the area revealed a water well is actually located approximately 0.25 miles northeast of the proposed well in the SW/4 NE/4 of section 33-T12S-R28E. According to the rancher, the well produces water from a depth of approximately 150'-200' at a rate of 25 gallons per minute. By examination of sample logs and electric logs the top of the Permian aged Rustler formation is at 160' in both the Union Waller Well and the Long Arroyo #2 well. The water well is located in between these two wells. The upper Permian aged Dewey Lake formation, which consists primarily of siltstones and shales ("red beds"), immediately overlies the Rustler anhydrite. This places the source of the water in either the basal portion of the Dewey Lake formation or the Rustler formation. In either case, all of the wells in the immediate area have cased off this interval and circulated cement to surface, thereby isolating and protecting any potential fresh water zones above the Permian aged San Andres formation. A water analysis of the water from this well is found on C-108 XI.

There are no known fresh water sources underlying the Siluro-Devonian formation in this area.

marbob
energy corporation

12/17/96

Kaywal, Inc.
P.O. Box 1060
Roswell, New Mexico 88202

RE: Long Arroyo #2 Disposal Well
Section 33-T12S-R28E
Chaves County, New Mexico

Dear John:

Enclosed is a copy of our application for converting the #2 Long Arroyo Well into a produced water disposal well. If you have any questions please give me a call at 623-5053 or call Raye Miller at 748-3303.

As a requirement of the New Mexico Oil Conservation Division we are required to notify any offset operators and the surface owner of our proposal to convert this well into a disposal well.

If you have no objection to the proposed disposal well, please sign below and return one copy to Marbob.

Sincerely,

MARBOB ENERGY CORPORATION

Mike Hanagan

KAYWAL, INC has no objections to the proposed disposal well.

BY:_____
John W. Lackey, President

DATED:_____

P.O. Box 227 Artesia, New Mexico 88211-0217 (505) 748-3303 Fax (505) 746-2523

FORM C-108 - ITEM XIVb
Proof of Notice by Publication

The following legal advertisement was delivered to the Roswell Daily Record (Roswell, Chaves County, New Mexico) on 12/13/96 for publication in the December 16, 23 & 30, 1996 volumes. An Affadavit of Publication will be submitted by the Roswell Daily Record after the final date of publication.

LEGAL NOTICE

Pursuant to State of New Mexico Oil Conservation Division Rule 701-B-3 Marbob Energy Corporation gives public notice that it is the intent of Marbob Energy Corporation to utilize the Long Arroyo Well #2, located 1980' from the south line and 2310' from the west line of section 33, Township 12 South, Range 28 East, Chaves County, New Mexico, N.M.P.M., for the underground disposal of produced water in the area. Disposal will average 5,000 barrels per day but could go as high as 10,000 barrels per day. Maximum injection pressure will not exceed 1630 pounds per square inch. Produced waters will be disposed of into the Siluro-Devonian formation through perforations at 8164' to 8250' from the surface. Questions regarding this proposal may be directed to Mike Hanagan, P.O. Box 1737, Roswell, New Mexico 88202, Telephone 623-5053. Objections to this proposal or request for hearing on the matter, together with the reasons therefore, must be filed in writing with the Oil Conservation Division, 2040 South Pacheco Street, Santa Fe, New Mexico 87505 within fifteen (15) days of this notice.
Published in the Roswell Daily Record, Roswell, N.M. December 16, 23, 30, 1996.

MONDAY

oswell Daily Record

35¢

Voice of the Pecos Valley

©1996 Roswell, New Mexico 88201 Monday, December 16, 1996

Legals

Publish December 16, 23, 30, 1996

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FORM C-108 - ITEM IX

COMPLETION & STIMULATION PROGRAM

The proposed disposal well was originally drilled as the Estoroil Producing Company #1 Waller Well in September, 1987 as a exploratory Siluro-Devonian test. 8 5/8" casing was set at 1900' and was cemented back to the surface with 1355 sacks of cement. After drilling to a total depth of 8501' Estoroil elected to plug and abandon the well. Estoroil set 25 sack cement plugs at 8465', 8213', 7403', 5197', 2958', 1960', 1630' and surface.

In April of 1989 Hanagan Petroleum Corporation re-entered the well as the #2 Long Arroyo Well. Plugs were drilled out to a depth of 8380' and 5.5" production casing was set at 8370'. The production casing was cemented with 325 sacks of cement with the top of the cement found at 6830' as determined by a temperature survey run on 4/28/89. Perforations in the uppermost portion of the Siluro-Devonian formation from 8164'-8174' yielded high water rates with low oil cuts and the zone was abandoned with a cast iron bridge plug spotted at 8110' with 35' of cement on top of the CIBP. The Mississippian formation was then perforated from 7685' to 7752'. The zone was acidized and the well was completed flowing 1.26 MMCFGPD from the Mississippian formation. Due to the well being located over 8 miles from the nearest gas line and due to indications of limited areal extent of the Mississippian pay zone, the well was never produced and has remained in a shut-in status since 1989. The well was successfully pressure tested for mechanical integrity purposes in 1992 with the results filed at the NMOCD-Artesia office.

In January, 1995 Marbob Energy acquired the well from Hanagan Petroleum.

Marbob proposes to (1) squeeze off the Mississippian perforations (7685'-7752'), and (2) drill out the cement and pressure test the squeezed perforations so as to insure the perforations have been sealed, and (3) drill out the cast iron bridge plug and clean out hole to TD of 8367', and (4) perforate 8164' to 8250', and (5) injection test disposal interval to see if stimulation is necessary, and (6a) if stimulation is not necessary, which we feel is the probable case, place the well in a disposal status, or (6b) if stimulation is necessary, acidize the well with 1,000 gl - 2,000 gl of 15%-20% acid as needed to open the disposal interval.

FORM C-108 - ITEM X

LOGGING & TEST DATA

Well logs and tests are on file at the NMOCD-Artesia offices. Estoroil ran gamma ray, sonic and resistivity logs on 9/26/87 and Hanagan ran a gamma ray-neutron-densisty log on 4/18/89.

FORM C-108 - ITEM XI

Fresh Water Analysis

A fresh water well is located approximately 1500' north-northeast of the proposed disposal well in the SW/4 NE/4 of section 33 (approximately 200' west of the Union Waller dry hole). The well is around 200' deep with a perforated interval of between 150' and 200'. A water sample was obtained from this well on 12/14/96 an analyzed by Halliburton Services on 12/16/96. A copy o this analysis is attached as C-108 XIa.

FORM C-108 - ITEM XII

Affirmative Statement

Applicant hereby affirms that we have examined the available geologic and engineering data and find no evidence of open faults or any other indication of hydrologic connection between the disposal zone and any underground source of drinking water.

HALLIBURTON ENERGY SERVICES
Artesia Service Center

Laboratory Report

Company Name: MARBOB ENERGY CORP
Artesia, N.M.

Date: 12/16/96

Submitted By: Mike Hannagan

Date Rec.: 12/14/96

Lease: Ramos | Depth: | Formation: Water Well

Well #: | County: Chaves | Field:

Sample Markings:			
Resistivity	10 @ 72°F		
Specific Gravity	1.005 @ 60°F		
pH	6.88		
Chlorides	300 mpl	mpl	mpl
Calcium	350 mpl	mpl	mpl
Magnesium	150 mpl	mpl	mpl
Sulfates	2000 mpl	mpl	mpl
Bicarbonates	150 mpl	mpl	mpl
Soulble Iron	Nil mpl	mpl	mpl
	mpl	mpl	mpl

Remarks: Sulfates are high for mixing cement, maximum recommended = 1800 mpl
O.K. if using Premium Plus Cement (high sulphate resistant)

mpl = milligrams per liter

David McKenzie
Respectfully submitted by

Analyst: same

Halliburton Energy Services

NOTICE: This report is for information only and the content is limited to the sample described. Halliburton Energy Services makes no warranties, expressed or implied, as to the accuracy of the contents or results. Any user of this report agrees Halliburton Energy Services shall not be liable for any loss or damage, regardless of cause, including any act or omission of Halliburton Energy services, resulting from the use hereof.

FORM C-108 - ITEM XIVa

Proof of Notice
(Offset Operators, Surface Owners and Mineral Owners)

Marbob will provide, by way of certified mail, a copy of this complete application to the following parties:

(i.) OFFSET OPERATORS
There are no offset operators within the 0.5 mile or 2.0 mile radius of the proposed disposal well. Marbob Energy is the operator of the nearest producing well, (the #1 Ramos-Fee, located in the NW/4NE/4 of section 33) and Marbob is the only oil and gas lessee in the area of review.

(ii.) SURFACE OWNERS
The surface owner over the entire area of review is Ramos Cattle Company. A complete copy of this application has been sent via certified mail to Ramos Cattle Company at the following address:

Ramos Cattle Company
P.O. Box 405
Dexter, New Mexico 88230
Attention: Mr. Juan Ramos
Telephone: 734-5126

(iii.) MINERAL OWNERS
The mineral owner over the entire area of review is Kaywal, Inc. . A complete copy of this application has been sent via certified mail to Kaywal, Inc. at the following address:

Kaywal, Inc.
P.O. Box 1060
Roswell, New Mexico 88202
Attention: Mr. John Lackey
Telephone: 622-5492

After receiving the "returned receipt" stub from the certified mail form, Marbob will forward a copy of the "returned receipt" stub for your documentation.

marbob
energy corporation

12/17/96

Ramos Cattle Company
P.O. Box 405
DexterMexico 88230

RE: Long Arroyo #2 Disposal Well
Section 33-T12S-R28E
Chaves County, New Mexico

Dear Juan:

Enclosed is a copy of our application for converting the #2 Long Arroyo Well into a produced water disposal well. If you have any questions please give me a call at 623-5053 or call Raye Miller at 748-3303.

As a requirement of the New Mexico Oil Conservation Division we are required to notify any offset operators and the surface owner of our proposal to convert this well into a disposal well.

If you have no objection to the proposed disposal well, please sign below and return one copy to Marbob.

Sincerely,

MARBOB ENERGY CORPORATION

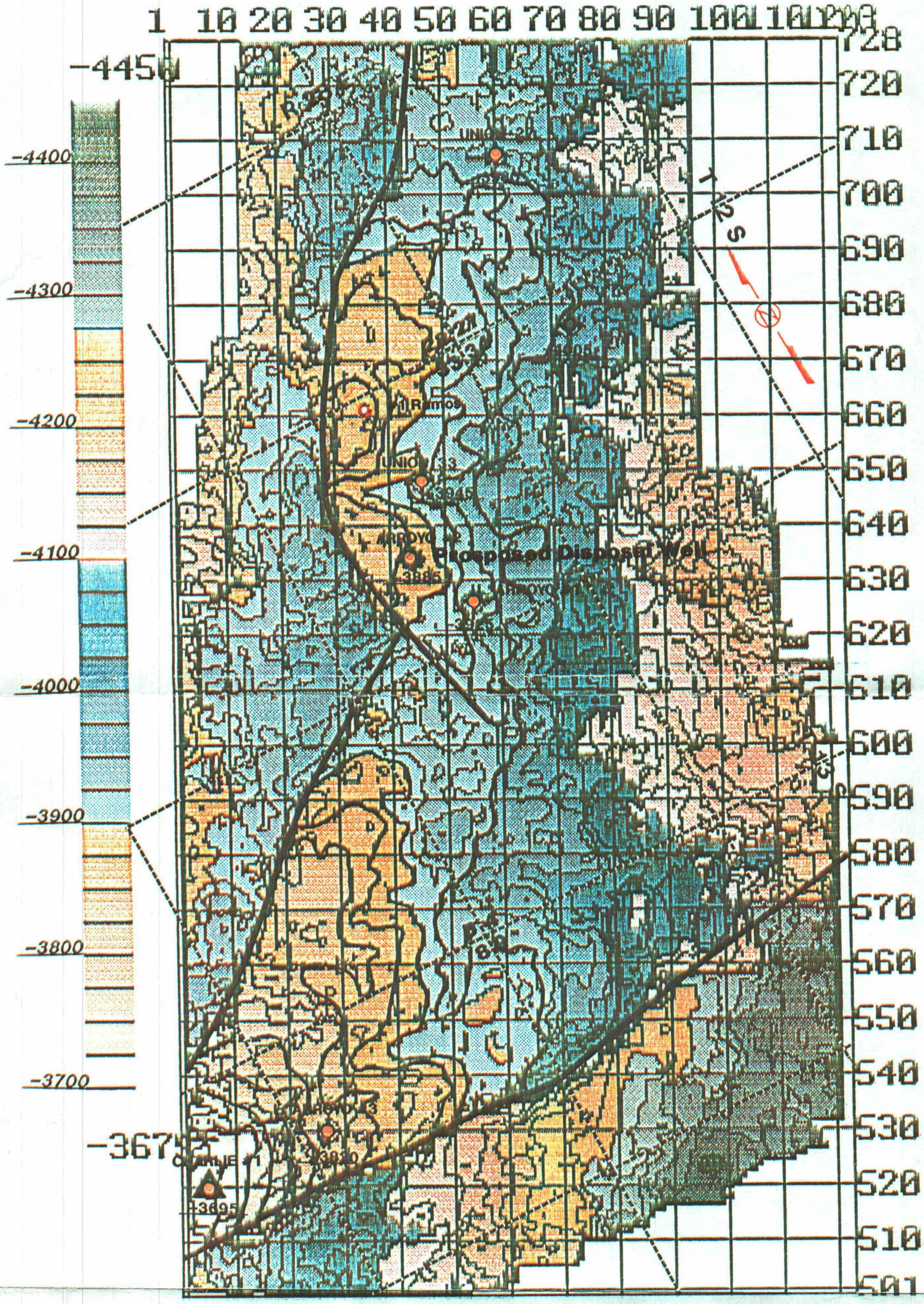
Mike Hanagan

RAMOS CATTLE COMPANY has no objections to the proposed disposal well.

BY:_____
Juan Ramos, President

DATED:_____

P.O. Box 227 Artesia, New Mexico 88211-0217 (505) 748-3303 Fax (505) 746-2523



Marbob Energy Corp. – Long Arroyo II Prospect

Depth Map on Top of the Mississippian

Scale: 1"=2,000' Contour Interval = 25' S. Blaylock 1/96

C–108 VIIIc

marbob
energy corporation

January 6, 1997

Oil Conservation Division
New Mexico Energy and Minerals Department
2040 South Pacheco Street
Santa Fe, New Mexico 87505

Attention: Mr. Ben Stone

RE: Long Arroyo II
Section 33-12S-28E
1980' FSL and 2310' FWL
Chaves County, New Mexico

Dear Mr. Stone:

Please find enclosed a copy of the Affidavit of Publication to go along with the Water Disposal Well Application mailed to you on December 17, 1996 on the above referenced well.

Should you have any questions regarding this matter, please contact Mike Hanagan at 505/623-5053.

Sincerely,

Misti McLurg

Misti McLurg
Land Department

/mm
Enclosure

P.O. Box 227 Artesia, New Mexico 88211-0227 (505) 748-3303 Fax (505) 746-2523

AFFIDAVIT OF PUBLICATION

County of Chaves
State of New Mexico

I, Fran Saunders,
Legal Clerk,

Of the Roswell Daily Record, a daily newspaper published at Roswell, New Mexico, do solemnly swear that the clipping hereto attached was published once a week in the regular and entire issue of said paper and not in a supplement thereof for a period
of: once a week for 3 weeks

beginning with issue dated
December 16th ,1996

and ending with the issue dated
December 30th , 1996

Fran Saunders
Clerk

Sworn and subscribed to before me

this 30th day of

December ,1996

Marylon S Skipper
Notary Public

My Commission expires

July 25, 1998

(SEAL)

JAN 0 2 1997

Publish December 16, 23, 30, 1996

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LARGE FORMAT
EXHIBIT HAS
BEEN REMOVED
AND IS LOCATED
IN THE NEXT FILE