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Date: February 15, 2005  
Number of pages including cover sheet: 2

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To: Mr. Mark Fesmire, P.E.  
New Mexico Oil Conservation Division

Fax phone: (505) 476-3462

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From: Tammy Verdugo  
Yates Petroleum Corporation  
106 South Fourth Street  
Artesia, NM 88210  
Phone: 505-748-4358  
Fax phone: 505-748-4572

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Remarks:

Mr. Fesmire:

Please find to follow correspondence from Chuck Moran concerning the application of Nearburg Producing Company on the McKittrick 11 Federal #5 well.

Thank you.

**YATES PETROLEUM CORPORATION**

A handwritten signature in cursive script that reads "Tammy Verdugo".

Tammy Verdugo  
Land Assistant

/tv

MARTIN YATES, III  
1912 - 1988  
FRANK W. YATES  
1926 - 1988



105 SOUTH FOURTH STREET  
ARTESIA, NEW MEXICO 88210-2118  
TELEPHONE (505) 748-1471

S. P. YATES  
CHAIRMAN OF THE BOARD  
JOHN A. YATES  
PRESIDENT  
PEYTON YATES  
EXECUTIVE VICE PRESIDENT  
RANDY G. PATTERSON  
SECRETARY  
DENNIS G. KINSEY  
TREASURER

February 15, 2005

*Via Facsimile/Regular Mail*

Mr. Mark Fesmire, P. E.  
New Mexico Oil Conservation Division  
1220 South St. Francis Drive  
Santa Fe, NM 87505

Re: Application of Nearburg Producing Company  
McKittrick 11 Federal #6  
Township 22 South, Range 34 East, N.M.P.M.  
Section 11: SW/4  
Eddy County, New Mexico

Dear Mr. Fesmire:

Yates Petroleum Corporation by letter dated January 25, 2005 protested Nearburg Producing Company's application for administrative approval of a salt water disposal well for the McKittrick 11 Federal #5 well. We hereby withdraw our objection to this application.

If you have any questions, please contact me at (505) 748-4349.

Very truly yours,

**YATES PETROLEUM CORPORATION**

  
Chuck Moran  
Landman

CEM/tv

Cc: William F. Carr  
Holland & Hart  
110 N. Guadalupe, Suite 1  
P.O. Box 2208  
Santa Fe, NM 87504-2208

Nearburg Producing Company  
3300 North "A" Street, Building 2, Suite 120  
Midland, TX 79705



# NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

**BILL RICHARDSON**

Governor

**Joanna Prukop**

Cabinet Secretary

**Mark E. Fesmire, P.E.**

Director

**Oil Conservation Division**

January 26, 2005

VIA FACSIMILE (432)-686-7806/Mail

Brian Huzzey  
3300 North "A" St.,  
Building 2, Suite 120  
Midland, TX 79705

**RE: Application of Nearburg Producing Company for Salt Water Disposal**  
McKittrick 11 Federal  
Well No. 3 in NW/4 and Well No. 5 in SW/4 (Deviated Wells)  
Section 11, Township 22 South, Range 24 East, NMPM, Eddy County, NM  
Proposed Cisco/Canyon Injection Intervals

Dear Brian:

Yates Petroleum Corporation has objected to both of your applications as referenced above within the 15-day protest period. Therefore, we can no longer process these applications administratively. Please disregard any injection permits you may receive through the mail for these two wells.

If you do not reach agreement with Yates and still desire to inject into these wells, you must work with Florene Davidson of this office to set the applications to hearing. If you do reach an agreement, I must have a letter from Yates withdrawing the protest, prior to resuming administrative review of this application.

If I don't hear from you by next Wednesday, February 2, 2005, I will consider these administrative applications as cancelled.

Many Regards,

**William V. Jones, P.E.**

505-476-3448

[wvjones@state.nm.us](mailto:wvjones@state.nm.us)

*Heard FROM Brian  
the next week. He  
asked (verbally) to keep  
the #5 application active.  
WV Jones*

Cc: William F. Carr by fax (505-983-6043) as attorney for Nearburg Producing Company  
Oil Conservation Division – Artesia

MARTIN YATES, III  
1912 - 1985  
FRANK W. YATES  
1936 - 1986



105 SOUTH 2nd STREET  
ARTESIA, NEW MEXICO 88210-2118  
TELEPHONE (505) 748-1471

S. P. YATES  
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RANDY G. PATTERSON  
SECRETARY  
DENNIS G. KINSEY  
TREASURER

January 25, 2005

*Via Facsimile (505) 476-3462/ Federal Express*

New Mexico Oil Conservation Division  
Attn: Mark Fesmire, P. E.  
1220 South St. Francis Dr.  
Santa Fe, New Mexico 87505

RE: Application of Nearburg Producing Company  
McKittrick 11 Federal No. 5  
Township 22 South, Range 24 East, N.M.P.M.  
Section 11: SW/4  
Eddy County, New Mexico

Dear Mr. Fesmire:

Yates Petroleum Corporation is in receipt of Nearburg Producing Company's application for administrative approval of a salt water disposal well for its McKittrick 11 Federal No. 5 well. We hereby **object** to this application and request the matter be set for hearing.

If you have any questions, please contact me at (505) 748-4349.

Very truly yours,

**YATES PETROLEUM CORPORATION**

Chuck Moran  
Landman

Cc: William F. Carr  
Holland and Hart & Campbell  
110 North Guadalupe, Suite 1  
P. O. Box 2208  
Santa Fe, NM 87504-2208

Nearburg Producing Company  
3300 North "A" Street, Building 2, Suite 120  
Midland, TX 79705

DATE IN 1-10-05	SUSPENSE 1/25/05	ENGINEER jones	LOGGED IN 1-12-05	TYPE SWD	PPR NO. PSM0501225987
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ABOVE THIS LINE FOR DIVISION USE ONLY

## NEW MEXICO OIL CONSERVATION DIVISION

- Engineering Bureau -

1220 South St. Francis Drive, Santa Fe, NM 87505



### ADMINISTRATIVE APPLICATION CHECKLIST

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

#### Application Acronyms:

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

- [1] **TYPE OF APPLICATION** - Check Those Which Apply for [A]
- [A] Location - Spacing Unit - Simultaneous Dedication  
☐ NSL ☐ NSP ☐ SD
- Check One Only for [B] or [C]
- [B] Commingling - Storage - Measurement  
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM
- [C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery  
☐ WFX ☐ PMX ☒ SWD ☐ IPI ☐ EOR ☐ PPR
- [D] Other: Specify \_\_\_\_\_
- [2] **NOTIFICATION REQUIRED TO:** - Check Those Which Apply, or ☐ Does Not Apply
- [A] ☐ Working, Royalty or Overriding Royalty Interest Owners
- [B] ☐ Offset Operators, Leaseholders or Surface Owner
- [C] ☐ Application is One Which Requires Published Legal Notice
- [D] ☐ Notification and/or Concurrent Approval by BLM or SLO  
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office
- [E] ☐ For all of the above, Proof of Notification or Publication is Attached, and/or,
- [F] ☐ Waivers are Attached

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

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

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

Print or Type Name

Signature

Title

Date

e-mail Address

*Neenbury*  
*M-KITRICK 11 Feb No. 5*  
*Proposed new drill*  
*UPPER CISCO CANYON int*  
*Lower CISCO CANYON*  
*Rafferty Drilling (THROUGH)*  
*API?*  
*all CASING CNT MUST*  
*circulate*  
*30-015-33611*

HOLLAND & HART<sup>LLP</sup>



**William F. Carr**  
wcarr@hollandhart.com  
44505.0002

January 10, 2005

2005 JAN 10 PM 3 52

Mark E. Fesmire, P.E.  
Director  
Oil Conservation Division  
New Mexico Energy, Minerals and  
Natural Resources Department  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505

**Re: Application of Nearburg Producing Company for  
Administrative Approval of Salt Water Disposal  
Eddy County, New Mexico  
McKittrick 11 Federal No. 5**

Ladies and Gentlemen:

Enclosed is an application from Nearburg Producing Company seeking authorization to dispose of produced water into its McKittrick 11 Federal No. 5. Thank you for your attention to this matter.

Very truly yours,

William F. Carr  
of Holland & Hart<sup>LLP</sup>

WFC:keh  
Enclosures

cc: Bob Shelton

3324684\_1.DOC

**Holland & Hart<sup>LLP</sup>**

Phone [505] 988-4421 Fax [505] 983-6043 [www.hollandhart.com](http://www.hollandhart.com)

110 North Guadalupe Suite 1 Santa Fe, NM 87501 Mailing Address P.O. Box 2208 Santa Fe, NM 87504-2208

Aspen Billings Boise Boulder Cheyenne Colorado Springs Denver Denver Tech Center Jackson Hole Salt Lake City Santa Fe Washington, D.C.

**APPLICATION FOR AUTHORIZATION TO INJECT**

- I. PURPOSE: Secondary Recovery Pressure Maintenance XX Disposal Storage  
Application qualifies for administrative approval? Yes No
- II. OPERATOR: Nearburg Producing Company  
ADDRESS: 3300 N A St., Bldg 2, Ste 120, Midland, TX 79705  
CONTACT PARTY: Brian Huzzey PHONE: 432/686-8235
- 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 XX No  
If yes, give the Division order number authorizing the project: \_\_\_\_\_
- V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.
- VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.
- VII. Attach data on the proposed operation, including:
1. Proposed average and maximum daily rate and volume of fluids to be injected;
  2. Whether the system is open or closed;
  3. Proposed average and maximum injection pressure;
  4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
  5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
- \*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.
- IX. Describe the proposed stimulation program, if any.
- \*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).
- \*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.
- XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.
- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.
- XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.
- NAME: Brian Huzzey TITLE: Sr Staff Engineer  
SIGNATURE: Brian H. Huzzey DATE: 1-5-05  
E-MAIL ADDRESS: bhuzzey@nearburg.com
- \* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: \_\_\_\_\_

### III. WELL DATA

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

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

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

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

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

### XIV. PROOF OF NOTICE

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

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

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

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

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



**APPLICATION FOR AUTHORIZATION TO INJECT**  
**(continuation)**

**III. WELL DATA**

See attached "Proposed" Injection Well Data Sheets.

**IV. IS THIS AN EXPANSION OF AN EXISTING PROJECT?**

No

**V. MAP**

See attached map with ½ mile and 2 mile radius circles

**VI. WELLS WITHIN THE AREA OF REVIEW**

There is one well that penetrates the proposed Cisco/Canyon injection zone within the Area of Review. It is:

**McKittrick 11 Federal No. 3 (Section 11) – Cisco/Canyon Oil Well on Sub-Pump  
(Currently shut-in pending further  
evaluation – may be converted to water  
disposal**

See the attached Area of Review well data tabulation sheet for the details on this well.

**VII. PROPOSED OPERATIONS**

Overall Objective:

**Nearburg Producing Company is planning to drill the McKittrick 11 Federal No. 5 in Section 11, T22S-R24E, Eddy County, New Mexico as a down-structure Cisco/Canyon test to extend the limits of the oil column in the field. If successful, the well will be completed as a Cisco/Canyon oil well. If unsuccessful, it is proposed to complete the well as a Cisco/Canyon water disposal well with water being injected some 150' TVD below the Cisco/Canyon oil/water contact into perforations from approximately 8556-9187' MD (8212-8812' TVD).**

1. Proposed average and maximum daily rate and volume of fluids to be injected.

**15,000 BWPD and 25,000 BWPD, respectively**

2. The system is closed or open.

Open

3. Proposed average and maximum injection pressure.

**1000 psi and 1642 psi, respectively**

4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than re-injected produced water.

**Disposal water will be re-injected Cisco/Canyon produced water**

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.

**With two exceptions, ten wells produce from the Cisco/Canyon within one mile of McKittrick 11 Federal No. 5:**

**Big Walt 2 State No. 7 – Section 2**

**Big Walt 2 State No. 9 – Section 2**

**McKittrick Federal No. 1Y – Section 11**

**McKittrick 11 Federal No. 2 – Section 11**

**McKittrick 11 Federal No. 3 – Section 11 (currently shut-in)**

**McKittrick 11 Federal No. 4 – Section 11**

**Mighty Mite AZF Federal No. 1– Section 10**

**Shelby 12 Federal No. 5 – Section 12**

**Walt Canyon AMA Federal No. 7 – Section 10**

**Walt Canyon AMA Federal No. 8 – Section 10 – Only APD shown on OCD website**

## **VIII. GEOLOGICAL DATA**

### **Injection Zone:**

Lithologic Detail: **Largely Dolomite with some Limestone stringers**

Geologic Name: **Pennsylvanian Cisco/Canyon**

Thickness: **990'**

Depth: **8062' TVD (8399' MD) to top of Cisco/Canyon (estimated)**

Oil/Water Contact: **Estimated to be at 8399' MD or 8062' TVD (-4050' subsea based on an estimated KB of 4012')**

### **Sources of Drinking Water Overlying the Proposed Injection Zone:**

Geologic Names: **Alluvium, Grayburg, and possibly Capitan Reef**

Depth to Bottom of Sources: **Water wells vary in depth from 42' to 770' in T22S-R24E**

### **Sources of Drinking Water Underlying the Proposed Injection Zone:**

**None**

#### **IX. PROPOSED STIMULATION PROGRAM**

Plans are to stimulate the perforated Cisco/Canyon section with 30,000 gallons of 20% HCL-NE-FE acid.

#### **X. LOGS AND TEST DATA**

Well data to be filed with the OCD upon the drilling and completion of the well

#### **XI. ANALYSIS OF FRESH WATER WELLS WITHIN ONE MILE OF DISPOSAL WELL**

Two fresh water wells are located within one mile of the proposed disposal well according to records obtained from the New Mexico Office of the State Engineer (see well locations on the attached map). They are:

##### **Fresh Water Well #3:**

Owner(s): Kincaid/G Bar E Ranch  
Well Numbers: C-2351/C-2384 respectively  
Location: SW NE NE Section 15, T22S-R24E (oil field terminology)  
Location from Proposed Disposal Well: +/- 3300' southwest  
Depth: 120'  
Date of Water Sample: 12/2/04 (see attached chemical analysis)

##### **Fresh Water Well #4**

Owner(s): Shaffer  
Well Number: C-0843  
Location: Section 10, T22S-R24E (nothing more specific is given)  
Location from Proposed Disposal Well: +/- 4750' west  
Depth: 220'  
Date of Water Sample: 12/2/04 (see attached chemical analysis)

#### **XII. AFFIRMATIVE STATEMENT OF NON-COMMUNICATION BETWEEN DISPOSAL ZONE AND ANY UNDERGROUND SOURCES OF DRINKING WATER.**

Re: Proposed McKittrick 11 Federal No. 5 Cisco/Canyon Disposal Well

We have examined the available, seismic, geologic, and engineering data and find no evidence of open faults or any other hydraulic connection between the disposal zone and any underground source of drinking water.

Nearburg Producing Company

Date: 1-5-05

  
\_\_\_\_\_  
Brian Huzzey  
Senior Staff Engineering

## INJECTION WELL DATA SHEET

OPERATOR: Nearburg Producing Company

WELL NAME &amp; NUMBER: McKittrick 11 Federal SWD No. 5

Surface: 1200' FNL &amp; 1490' FWL

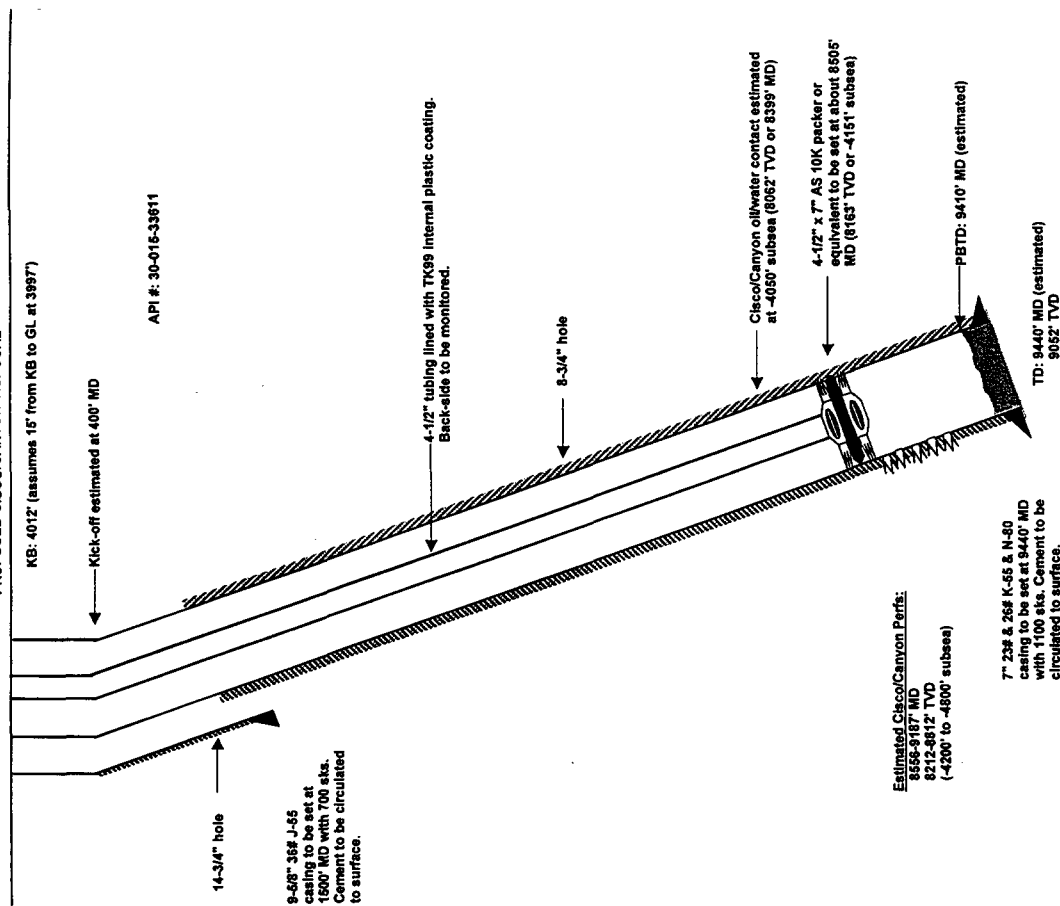
Bottom Hole: 1677' FSL &amp; 882' FWL

11 22S 24E  
11 22S 24E

FOOTAGE LOCATION UNIT LETTER SECTION TOWNSHIP RANGE

## WELLBORE SCHEMATIC

\*PROPOSED CISCO/CANYON DISPOSAL\*



## WELL CONSTRUCTION DATA

## Surface Casing

Hole Size: 14-3/4" Casing Size: 9-5/8"

Cemented with: 700 (est) sx. or ft<sup>3</sup>

Top of Cement: Surface Method Determined: To Be Circulated

## Intermediate Casing

Hole Size: Casing Size:

Cemented with: sx. or ft<sup>3</sup>

Top of Cement: Method Determined:

## Production Casing

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

Cemented with: 1100 (est) sx. or ft<sup>3</sup>

Top of Cement: Surface Method Determined: To Be Circulated

Total Depth: 9440' MD (est)

9052' MD (est)

## Injection Interval

8556' MD feet to 9187' MD (est)

8212' TVD 8812' TVD (est)

(Perforated or Open Hole, indicate which)

Other Type of Tubing/Casing Seal (if applicable): \_\_\_\_\_

	Yes	No
1. Is this a new well drilled for injection?	XX	XX

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. None

Overlying: None

January 4, 2005

MCKITTRICK 11 FEDERAL NO. 5 PROPOSED CISCO/CANYON WATER DISPOSAL WELL														
AREA OF REVIEW WELL DATA TABULATION SHEET														
Well	API #	Locations		TD (PBDT) Feet	Hole Size Inches	Casing Size Inches	Setting Depths Feet	Cement Sacks	Top of Cement Feet	Perforations Feet	Completion Date M/D/Y	Well Type	Current Status	
		Surface	Bottom Hole											
	30-015-													
Mckittrick 11 Fed No. 3	33610	1200' FNL 1470' FWL 11-22S-24E Unit C	1726' FNL 911' FWL 11-22S-24E Unit E	8460 MD (8280 MD)	14-3/4 8-3/4	9-5/8 7	1538 MD 8311 MD	1300 125 575	Surface 8076 MD From 3534 MD to Surface	8108-8208 MD	11/09/04	Cisco- Canyon Gas Pumping	Shut-In	
MD = Measured Depth														



# Water Analysis

Date: 12/2/2004

2401 Sivley, Artesia NM 88210

Phone (505) 746-3140 Fax (505) 746-2293

## Analyzed For

Company	Well Name	County	State
Nearburg	Sec 15 Well 3	Eddy	New Mexico

## Sample Source

Sample #

1

## Formation

Fresh

## Depth

Specific Gravity	1.000	SG @ 60 °F	1.002
pH	7.90	Sulfides	Not Tested
Temperature (°F)	70	Reducing Agents	Not Tested

## Cations

Sodium (Calc)	in Mg/L	981	in PPM	979
Calcium	in Mg/L	80	in PPM	80
Magnesium	in Mg/L	10	in PPM	10
Soluable Iron (FE2)	in Mg/L	0.0	in PPM	0

## Anions

Chlorides	in Mg/L	400	in PPM	399
Sulfates	in Mg/L	1,600	in PPM	1,597
Bicarbonates	in Mg/L	171	in PPM	170
Total Hardness (as CaCO3)	in Mg/L	240	in PPM	240
Total Dissolved Solids (Calc)	in Mg/L	3,242	in PPM	3,235
Equivalent NaCl Concentration	in Mg/L	2,318	in PPM	2,313

## Scaling Tendencies

\*Calcium Carbonate Index **13,664**

Below 500,000 Remote / 500,000 - 1,000,000 Possible / Above 1,000,000 Probable

\*Calcium Sulfate (Gyp) Index **128,000**

Below 500,000 Remote / 500,000 - 10,000,000 Possible / Above 10,000,000 Probable

\*This Calculation is only an approximation and is only valid before treatment of a well or several weeks after treatment.

## Remarks

Report # 1690





# Water Analysis

Date: 12/2/2004

2401 Sivley, Artesia NM 88210  
Phone (505) 746-3140 Fax (505) 746-2293

## Analyzed For

Company	Well Name	County	State
Nearburg	Sec 10 Well 4	Eddy	New Mexico

## Sample Source

## Sample #

1

## Formation

Fresh

## Depth

Specific Gravity

1.000

SG @ 60 °F

1.002

pH

7.80

Sulfides

Not Tested

Temperature (°F)

70

Reducing Agents

Not Tested

## Cations

Sodium (Calc)

in Mg/L

981

in PPM

979

Calcium

in Mg/L

64

in PPM

64

Magnesium

in Mg/L

14

in PPM

14

Soluble Iron (FE2)

in Mg/L

0.0

in PPM

0

## Anions

Chlorides

in Mg/L

400

in PPM

399

Sulfates

in Mg/L

1,600

in PPM

1,597

Bicarbonates

in Mg/L

146

in PPM

146

Total Hardness (as CaCO3)

in Mg/L

220

in PPM

220

Total Dissolved Solids (Calc)

in Mg/L

3,206

in PPM

3,200

Equivalent NaCl Concentration

in Mg/L

2,306

in PPM

2,301

## Scaling Tendencies

\*Calcium Carbonate Index

9,370

Below 500,000 Remote / 500,000 - 1,000,000 Possible / Above 1,000,000 Probable

\*Calcium Sulfate (Gyp) Index

102,400

Below 500,000 Remote / 500,000 - 10,000,000 Possible / Above 10,000,000 Probable

\*This Calculation is only an approximation and is only valid before treatment of a well or several weeks after treatment.

## Remarks

Report #

1691

# **MCKITTRICK 11 FEDERAL NO. 5 CISOC/CANYON DISPOSAL APPLICATION**

## **ADDENDUM TO THE C-108**

### **IMPACT OF WATER DISPOSAL UPON PRODUCTION**

Redesigned re-circulation electrical submersible pump (ESP) systems in the mid-1990s to handle both high gas rates and high total liquid rates have revitalized Cisco/Canyon gas production from high water cut and watered-out gas wells in the Indian Basin Field gas cap. An additional benefit of the redesigned ESP systems was to allow operators to be able to develop the Indian Basin Field oil column, which had been largely overlooked for nearly 30 years after the discovery and development of the gas cap. The ability to significantly reduce reservoir matrix, vug, and fracture pressures in the Cisco/Canyon oil column with these new ESP systems has resulted in higher oil production rates which has led to the recent development of the Indian Basin oil column on 80 acre spacing.

The Cisco/Canyon oil and gas wells on the leases operated by Nearburg Producing Company (see attached map) are part of two smaller, separate, structural highs that are immediately adjacent to the larger Indian Basin Field Cisco/Canyon anticline that rises to the northwest (note that the area has the same pool designation as Indian Basin). Called the MH Area by Nearburg, this area and the Indian Basin Field share the same large Cisco/Canyon aquifer, oil/water contact, and portions of the same oil column, but have different gas/oil contacts. The Indian Basin Field gas/oil contact at about -3750' subsea (based on well performance) is roughly 240' and 275' above the MH Area gas/oil contacts in the two structural highs.

Cisco/Canyon production from both the MH Area and the Indian Basin Field comes from a very vuggy and fractured upper dolomite interval that has a gross thickness of about 700-750' in the MH Area (total Cisco/Canyon thickness is 950-1000') with some occasional limestone stringers of limited area extent. While matrix permeability is considered to be low, the vugs and fractures have high permeabilities which account for the high productivities of the wells equipped with ESPs.

The proposed McKittrick 11 Federal No. 5 Cisco/Canyon water disposal well is located within the confines of what Nearburg calls the Big Walt High that has a Cisco/Canyon gas/oil contact at about -3990' subsea and an oil/water contact at about -4050' subsea, both of which are estimated from DSTs, well tests, and overall well production performance. All of the current Big Walt 2 State oil and gas wells in Section 2 and McKittrick 11 Federal oil and gas wells in the N/2 of Section 11 (except for the E/2 of the NE/4) are completed in the Big Walt High and all are producing on ESPs.

The Big Walt High Cisco/Canyon gas cap was initially developed in 1993 and 1994 by Big Walt 2 State Nos. 1, 2 and 3. These three wells were completed as flowing gas wells with little to no initial water production. All three had relatively short producing lives and low cumulative gas recoveries as water production began to increase to the point that the wells loaded up and died and were shut-in. The table below shows that wells with the lowest perforations began producing water and finally loaded up and died before wells with the higher perforations, which is what would be expected.

<b>Well</b>	<b>Lowest Perforations Feet Subsea</b>	<b>Date Water &gt;100 BWPD Month/Year</b>	<b>Date Shut-In Month/Year</b>
Big Walt No. 1	-4010	12/93	12/94
Big Walt No. 2	-3954	10/94	5/95
Big Walt No. 3	-3914	1/97	7/98

In total, the three wells recovered only 3.1 BCF gas and 7.6 MB oil and condensate from the Big Walt High before being shut-in.

Nearburg began to redevelop the Big Walt High Cisco/Canyon reservoir in May 2003 with the drilling and completion of the Big Walt 2 State No. 5. To date, nine new oil and gas wells have been drilled, completed, and equipped with ESPs, and Big Walt 2 State No. 2 has been deepened into the Cisco/Canyon and equipped with an ESP (note that Big Walt 2 State No. 1, equipped with only 5-1/2" casing that restricts ESP size and well productivity, is shut-in having been replaced by Big Walt 2 State No. 4, and Big Walt 2 State No. 3 is now a Morrow gas well completed after the Cisco/Canyon watered out in July 1998).

Nearburg Producing Company is planning to drill the McKittrick 11 Federal No. 5 in Section 11, T22S-R24E, Eddy County, New Mexico as a down-structure Cisco/Canyon test to extend the limits of the oil column in the field. If successful, the well will be completed as a Cisco/Canyon oil well. If unsuccessful, it is proposed to complete the well as a Cisco/Canyon water disposal well with water being injected some 150' TVD below the Cisco/Canyon oil/water contact into perforations from approximately 8556-9187' MD (8212-8812' TVD). More water disposal capacity is needed in the MH Area as Nearburg plans to do more development drilling in the Big Walt High and in the Shelby High to the southeast.

Based on the thickness and characteristics of the Cisco/Canyon reservoir, the declining reservoir pressures in the MH Area, and the invasion of aquifer water into the Big Walt High gas cap, Nearburg, in its best judgment, believes that disposing of Cisco/Canyon water into the Cisco/Canyon reservoir well below the oil/water contact will not adversely affect production, oil and gas recoveries, nor serve to impair correlative rights. This judgment is based on for the following reasoning.

1. Disposing of water approximately 150' TVD below the Cisco/Canyon oil/water contact should in itself be an adequate safety factor and allow for the ample dispersion of the disposal water into the aquifer.
2. The open hole porosity logs from all of the wells drilled on the Big Walt High all show low porosity dolomite intervals scattered throughout the Cisco/Canyon formation that likely have low permeabilities. These intervals should also be encountered in the McKittrick 11 Federal No. 5, and they could act as partial barriers to upward water movement and/or partial baffles to aid in the dispersion of the disposal water into the aquifer through the vugs that are also apparent on the open hole logs from the offset producers.
3. The current Cisco/Canyon reservoir pressure in the MH Area is between 950 and 1000 psi at a -3963' subsea datum and is rapidly dropping by 160-180 psi per

year (it is expected that this rate of pressure decline will only increase in the future). That compares to an average drop of only 28 psi per year in the MH Area from 1968 to 1997, and reflects the impact of all the ESP equipped Indian Basin gas wells and the development of the Indian Basin oil column and MH Area with wells drilled and equipped with ESPs. With the current high rate of pressure decline, water disposal into the Cisco/Canyon aquifer in McKittrick 11 Federal No. 5 would be benign at least and may moderate some of the pressure decline at best since nearly 210,000 BWPD are currently being produced from Cisco/Canyon wells in the Indian Basin Field and MH Area (this does not consider the reservoir barrels of gas and oil that are also being produced out of the Cisco/Canyon reservoir).

4. Aquifer water has already invaded well into the Big Walt High Cisco/Canyon gas cap (up to -3914' subsea) and watered out the three original flowing gas well producers as described above. So the concern about water encroachment into the gas cap resulting from disposing water into the Cisco/Canyon aquifer in McKittrick 11 Federal No. 5 is not an issue. All of the new Big Walt High Cisco/Canyon gas wells are equipped with ESPs and produce 3000-4000 BWPD along with gas and oil.



January 10, 2005

**CERTIFIED MAIL – RETURN RECEIPT REQUESTED**

Gregory Rockhouse Ranch  
1108 West Pierce  
Carlsbad, New Mexico 88220

Yates Petroleum Corporation  
Attn: Randy Patterson  
105 South Fourth Street  
Artesia, New Mexico 88210-2118

Bureau of Land Management  
320 East Greene Street  
Carlsbad, New Mexico 88220

**Re: Application of Nearburg Producing Company for  
Administrative Approval of Salt Water Disposal  
Eddy County, New Mexico  
McKittrick 11 Federal No. 5**

Ladies and Gentlemen:

This letter is to advise you that Nearburg Producing Company is in the process of filing the enclosed application with the New Mexico Oil Conservation Division seeking authorization to dispose of produced water into its McKittrick 11 Federal No. 5 well at a surface location of 1200 feet from the North line and 1490 feet from the West line of Section 11, Township 22 South and Range 24 East, NMPM, Eddy County, New Mexico. The bottom hole location of this well after it is drilled is expected to be at approximately 1677 feet from the South line and 882 feet from the West line of Section 11, Township 22 South and Range 24 East, NMPM, Eddy County, New Mexico. The source of the produced water will be from wells in the area that produce from the Cisco/Canyon formation.

Nearburg Producing Company proposes to dispose of the water back into the Cisco/Canyon aquifer about 150 feet below the estimated oil/water contact into perforations from 8212 feet to about 8812 feet true vertical depth. The initial injection will be by vacuum and a maximum surface injection pressure of 1642 pounds per square inch is proposed by Nearburg Producing Company. The average daily injection rate



will be 15,000 barrels of water and the maximum daily injection rate will be 25,000 barrels of water.

If you have any questions concerning this application, you may contact Brian Huzzey at 432-686-8235, extension 206 or at Nearburg Producing Company, 3300 North "A" Street, Building 2, Suite 120, Midland, Texas 79705.

Objections to this application or requests for hearing must be filed with the Oil Conservation Division, 1220 South Saint Francis Drive, Santa Fe, New Mexico 87505, within fifteen (15) days of the date of this letter.

Very truly yours,

William F. Carr  
of Holland & Hart<sup>LLP</sup>

WFC:keh  
Enclosures