ENERGY AND MINERALS DEPARTMENT

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

Revised

APPLICATION FOR AUTHORIZATION TO INJECT

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

II. Operator: Marathon Oil Company

Address: P.O. Box 552 Midland, Texas 79702-0552

Contact party: R.A. Biernbaum Phone: (915) 682-1626

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 geological 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.

RECEIVED
OCT 20 1995
OIL CON. DIV.
DIST. 2

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: R.A. Biernbaum Title Project Manager - IBAT

Signature: R.A. Biernbaum Date: 10/16/95

* 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.

North Indian Basin Unit Well No. 2
Proposed Injection Well
Attachments to C-108

Part III

Well Data

See attached well data sheet for North Indian Basin Unit Well No. 2

Part 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.

See attached map.

Part 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.

There are no wells within the "area of review" (one-half mile radius) which penetrate the proposed disposal interval.

Part VII

See attachment.

Part VIII

See attachment.

Part IX

Describe the proposed stimulation program, if any.

The proposed injection well will be completed open hole. The proposed open hole interval will be stimulated using 15% HCl acid (± 6000 gallons).

North Indian Basin Unit Well No. 2
Proposed Injection Well
Attachments to C-108

Part X

Attach appropriate logging and test data on the well.

Forms C-103 and C-105, along with an inclination report and logs were filed on this well.

Part 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.

There are no fresh water wells within a one mile radius of the proposed injection well.

Part 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.

Marathon Oil Company, as Operator of the proposed injection well, has reviewed and examined available geologic and engineering data and finds no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

R.A. Biernbaum

Part XIII

Proof of notification

See attachments

North Indian Basin Unit Well No. 2
Proposed Injection Well
Attachments to C-108
(Part VII)

Proposed Operations

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

Fluid:	Produced Water	
Average Rate:	7,500	BPD
Maximum Rate:	15,000	BPD

2. ***Whether the system is open or closed.***

The proposed disposal system will be a closed system. Produced water will be gathered to a central location and will be pumped to the proposed injection well. The facility will be closed to "third-party" dispoal operators.

3. ***Proposed average and maximum injection pressure.***

Average Pressure:	1000	psi
Maximum Pressure:	2200	psi

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

The source of the injection fluid will be produced water from offsetting leases.

Formations: Upper Penn
Morrow

See attached water analysis for each of the above zones.

North Indian Basin Unit Well No. 2
Proposed Injection Well
Attachments to C-108
(Part VII)

Proposed Operations - continued

5. ***If injection is for disposal purpose 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.)***

Marathon Oil Company ran a DST test on North Indian Basin Unit Well No. 1 (Section 9, T-21-S, R-23-E, Eddy County New Mexico) in 1963. The DST tested the interval 10,009 ft to 10,100 ft. Based on the DST, the following analysis was reported:

Specific Gravity	1.109	
pH	6.8	
Resistivity	.285	@ 94° F
Chlorides (Cl)	11,000	
Sulfates (SO4)	1500	
Alkalinity (HCO3)	610	
Calcium (Ca)	1080	
Magnesium (Mg)	775	
Iron (Fe)	20	
Sodium (Na)	5359	
Sulfides (H2S)	negl.	

North Indian Basin Unit Well No. 2
Proposed Injection Well
Attachments to C-108
(Part 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.

Injection Zone

Geological Name: Siluro - Devonian

Lithology: Dolomite / Limestone

Thickness: ± 1000 ft

Depth: 10,000 ft

Drinking Water - Overlying

Geological Name: Alluvian

Depth to bottom: 50 ft (?)

Geological Name: Lower Queen

Depth to bottom: 900 ft

Above data based upon publication: *Geology and Ground Water Resources of Eddy County, New Mexico.*

Drinking Water - Underlying

None

North Indian Basin Unit Well No. 2
Proposed Injection Well
Attachments to C-108
(Part XIII)

Offset Operators

Marathon Oil Company is the Operator of all leases within one-half mile of the proposed injection well.

Surface Owners

1. United States of America
   Bureau of Land Management
   Carlsbad Resource Area
   P.O. Box 1778
   Carlsbad, New Mexico 88221

North Indian Basin Unit Well No. 2
Proposed Injection Well
Attachments to C-108
(Part XIII)

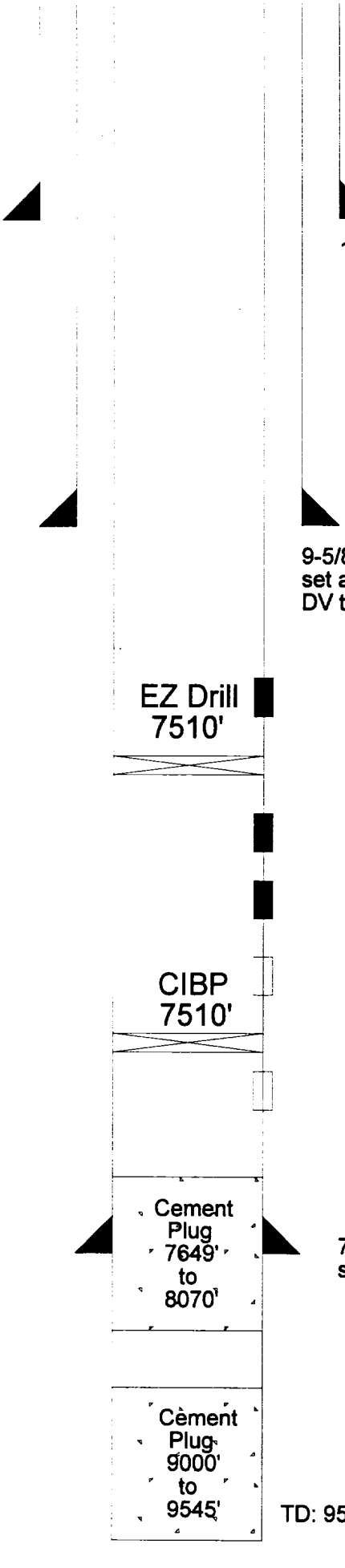
Proposed Injection Well

Marathon Oil Company, as Operator, proposes to deepen and convert the **North Indian Basin Unit Well No. 2** to water disposal service. The location of the well is 1650' FNL and 1650' FEL, Section 11, Township 21 South, Range 23 East, Eddy County New Mexico. The zone to be injected is the Siluro-Devonian from 10,000 ft to 11,000 ft with a maximum injection rate of 15,000 BWPD, and a maximum injection pressure of 2200 psig. Any interested party with objection or request of hearing should notify the Oil Conservation Division, P.O. Box 2088, Santa Fe, New Mexico 87501 within fifteen (15) days of this notice. Any questions should be directed to R.A. Biernbaum of Marathon Oil Company at P.O. Box 552, Midland, Texas 79702-0552 or telephone (915) 682 - 1626.

The above article was published in the *Carlsbad Current-Argus.*

North Indian Ba in Unit Well No. 2

1650' FNL and 1650' FEL
Section 11, T-21-S, R-23-E
Eddy County, New Mexico



Current Configuration

TD: 9545' KB: 3794' GL: 3785'

Surface Casing:
13-3/8", 48#, H-40 set at 236' Cemented with 300 sxs Trinity portland w / 2% HA-5.
Circulated cement.

Intermediate Casing:
9-5/8", 36#, J-55 set at 2379', DV Tool at 723'.
Cemented 1st stage with 450 sxs Trinity Lite w/ additives and 200 sxs Trinity Reg w/ additives.
2nd stage w/ 300 sxs Trinity Lite w/ additives, and 100 sxs Trinity. Cemented 180 sxs through 1-1/4" to surface.

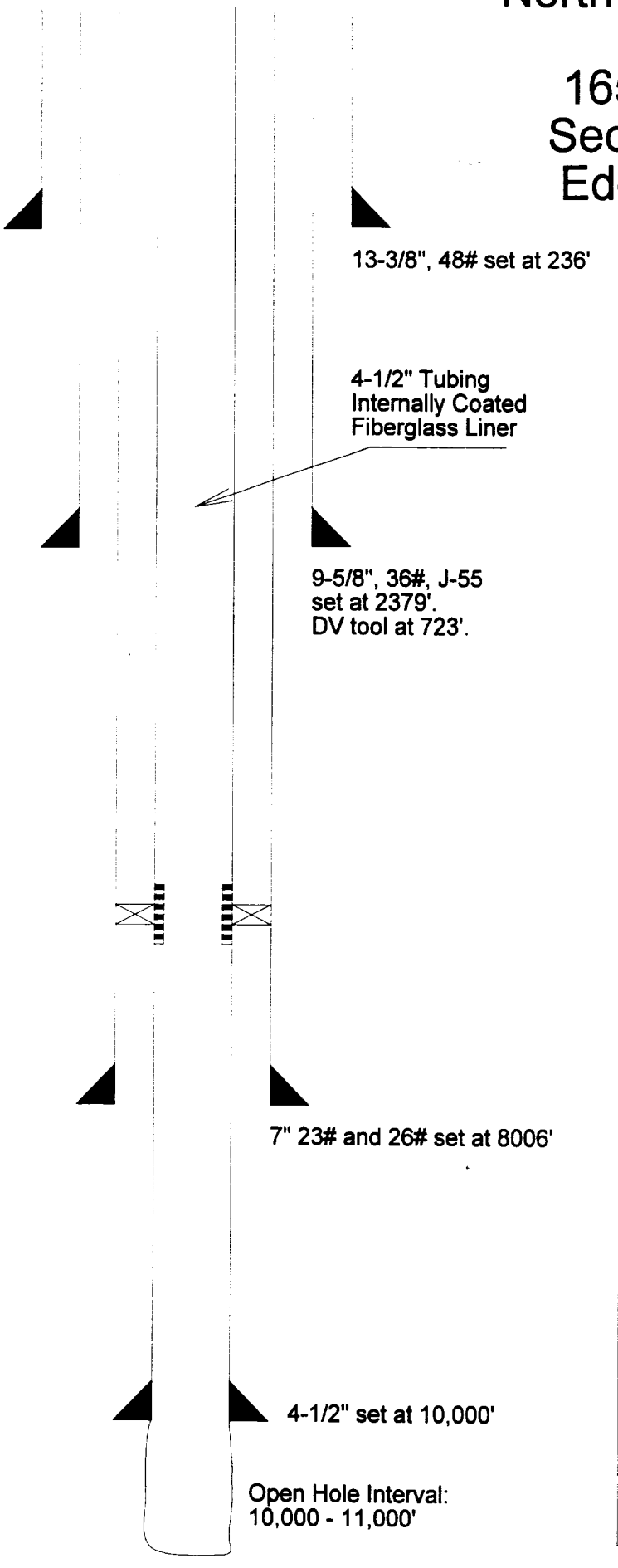
Production Casing:
7", 23# and 26# J-55 and N-80 set at 8006'
Cemented w / 2 plug method w/ 600 sxs Trinity Lite w/ additives. Tailed in w/ 300 sxs Incor Lone Star w/ additives. Did not circulate.
TOC: 4000' (Temperature Survey)

Perforations

6562' to 6668' Squeezed w/ 125 sxs cement
7552' to 7563' Squeezed w/ 275 sxs cement
7683' to 7716' Squeezed w/ 639 bbl Polymer
7734' to 7758' Open
7844' to 7862' Open

North Indian Basin Unit Well No. 2

1650' FNL and 1650' FEL
Section 11, T-21-S, R-23-E
Eddy County, New Mexico



TD: 9545' KB: 3794' GL: 3785'

Surface Casing:
13-3/8", 48#, H-40 set at 236' Cemented with 300 sxs Trinity portland w / 2% HA-5.
Circulated cement.

Intermediate Casing:
9-5/8", 36#, J-55 set at 2379', DV Tool at 723'.
Cemented 1st stage with 450 sxs Trinity Lite w/ additives and 200 sxs Trinity Reg w/ additives.
2nd stage w/ 300 sxs Trinity Lite w/ additives, and 100 sxs Trinity. Cemented 180 sxs through 1-1/4" to surface.

Production Casing:
7", 23# and 26# J-55 and N-80 set at 8006'
Cemented w / 2 plug method w/ 600 sxs Trinity Lite w/ additives. Tailed in w/ 300 sxs Incor Lone Star w/ additives. Did not circulate.
TOC: 4000' (Temperature Survey)

Perforations

6562' to 6668' Squeezed w/ 125 sxs cement
7552' to 7563' Squeezed w/ 275 sxs cement
7683' to 7716' Squeezed w/ 639 bbl Polymer
7734' to 7758' Open
7844' to 7862' Open

PROPOSED COMPLETION

Cement squeeze perforations:

7844' to 7862' with 100 sxs cement.
7734' to 7758' with 100 sxs cement.
7683' to 7716' with 150 sxs cement.

Liner

4-1/2" Liner set at 7800' to 10,000' with a 4-1/2" Liner Hanger / Polished Bore Receptical and a 4-1/2" External Casing Packer at 10,000'.
Cement with 350 sxs cement.

Open Hole Interval:

10,000 to 11,000'

Stimulation

Acidize with 6000 gallons 15% HCl acid.