

AE Order Number Banner

Application Number: pEG2528353294

Initial Application Part I

SWD-2679

MACK ENERGY CORP [13837]

Received: 10/08/2025

Revised March 23, 2017

RECEIVED:	REVIEWER:	TYPE:	APP NO:
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ABOVE THIS TABLE FOR OCD DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION
 - Geological & 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

Applicant: _____ OGRID Number: _____
 Well Name: _____ API: _____
 Pool: _____ Pool Code: _____

SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED BELOW

1) **TYPE OF APPLICATION:** Check those which apply for [A]

A. Location – Spacing Unit – Simultaneous Dedication

☐ NSL ☐ NSP (PROJECT AREA) ☐ NSP (PRORATION UNIT) ☐ SD

B. Check one only for [I] or [II]

[I] Commingling – Storage – Measurement

☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[II] Injection – Disposal – Pressure Increase – Enhanced Oil Recovery

☐ WFX ☐ PMX ☐ SWD ☐ IPI ☐ EOR ☐ PPR

2) **NOTIFICATION REQUIRED TO:** Check those which apply.

- A. ☐ Offset operators or lease holders
 B. ☐ Royalty, overriding royalty owners, revenue owners
 C. ☐ Application requires published notice
 D. ☐ Notification and/or concurrent approval by SLO
 E. ☐ Notification and/or concurrent approval by BLM
 F. ☐ Surface owner
 G. ☐ For all of the above, proof of notification or publication is attached, and/or,
 H. ☐ No notice required

FOR OCD ONLY

- ☐ Notice Complete
☐ Application Content Complete

3) **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

 Date

 Phone Number

 Signature

 e-mail Address

Deana Weaver

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

FORM C-108
Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

- I. PURPOSE: _____ Secondary Recovery _____ Pressure Maintenance X _____ Disposal _____ Storage
Application qualifies for administrative approval? X _____ Yes _____ No
- II. OPERATOR: Mack Energy Corporation
ADDRESS: P.O. Box 960 Artesia, NM 88210
CONTACT PARTY: Deana Weaver PHONE: 575-748-1288
- 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 X _____ 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: Deana Weaver TITLE: Regulatory Tech II
SIGNATURE: Deana Weaver DATE: 8/27/2025
E-MAIL ADDRESS: dweaver@mec.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: _____

DISTRIBUTION: File Electronically Via OCD Permitting

Side 2

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.

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.

Mack Energy Corporation
 Arrowhead SWD #1
 C-108

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.**

Operator: Mack Energy Corporation (OGRID # 013837)

Lease/ Well Name & Number: Arrowhead SWD #1

Legal Location: 495 FNL & 1320 FEL – Unit A- Section 23 T16S R30E – Eddy County

Coordinates: 32.9129393, -103.9381759 (NAD 83)

- (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.**

Casing String	Hole Size (in)	Casing Size (in)	Casing Depth (ft)	Sack Cmt (sx)	Top of Cmt (ft)	Method Determined
Surface	17 ½"	13 3/8"	300'	311sx	0	Circ
Intermediate	12 ¼"	9 5/8"	3,000'	800sx	0	Circ
Production	8 ¾"	7"	12,430'	1316sx	0	Circ

3 Stage DV Tools @ 11,290' & 2,900' on Production Casing String

A wellbore diagram is included in **Attachment 1**

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

3 ½", 9.3#, J-55 IPC Tubing @ 11,440'

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

7" 10K Arrowset Production Packer @ 11,440'

- 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.**

Mack Energy Corporation
Arrowhead SWD #1
C-108

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

Injection Formation Name- Devonian
Pool Name- SWD; Devonian
Pool Code- 96101

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

Perforated injection between 11,490-12,230'

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

New Drill for Injection

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

None

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

- **Overlying**

Rustler (270')	ABO (6375')
Top Salt (435')	Wolfcamp (7690')
Base Salt (1300')	Cisco (8945')
Yates (1470')	Strawn (10,050')
Seven Rivers (1715')	Atoka (10,285')
Queen (2280')	Morrow (10,505')
Grayburg (2680')	Miss (10,675')
San Andres (3005')	Lower Miss (11,020')
Glorieta (4460')	Woodford (11,470')
Tubb (5715')	Devonian (11,490')

- **Underlying**

Montoya (12,230')

Mack Energy Corporation
Arrowhead SWD #1
C-108

V. AOR Maps

Attach a map that identifies all wells and leases within two maps 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.

The following figures are included in **Attachment 2**:

- 2-Mile Well Map
- 1-Mile Well Map
- 1-Mile AOR Well List
- 2-Mile Lease Map
- 1-Mile Surface Ownership Map
- 1-Mile Mineral Ownership Map

VI. AOR List

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 type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

Details of the wells within the 1-mile AOR are included in **Attachment 2**.

VII. Operational Information

Attach data on the proposed operation, including:

- (1) Proposed average and maximum daily rate and volume of fluids to be injected;**

Maximum: 20,000 bwpd

Average: 15,000 bwpd

- (2) Whether the system is open or closed;**

The system is closed

- (3) Proposed average and maximum injection pressure;**

Maximum: 2,298 psi

Average: 1,000 psi

Mack Energy Corporation
Arrowhead SWD #1
C-108

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

It is anticipated that produced water from San Andres production wells in the area will be injected into the proposed SWD. Therefore, water analysis from these formations were obtained and are included in **Attachment 3**.

(5) If injection is for disposal purposed 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.)

N/A- There is not a Devonian well in the area to get a sample. We can provide the sample during completion. We can perf and swab the well to provide a sample.

VIII. Geologic Description

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.

The Arrowhead SWD #1 injected fluid will be contained within the Devonian Formation. Immediately above the Devonian, the Woodford Shale is low permeability and the Mississippian Lime Formation is low porosity and low permeability carbonate. The Woodford and Mississippian Lime Formations, which are combined 815' thick, will be the upper seal and contain the Devonian injected fluid. Below the Devonian Formation is 100' of low porosity and low permeability carbonate in the Montoya Formation. The top 100' of the Montoya will be the bottom seal and contain the Devonian injected fluid.

- Lithologic Detail- Dolomite
- Geological Name- Devonian
- Thickness- 740'
- TD- 12,430'
- Injection Depth- 11,490-12,230' perforated completion

A Seismic Risk Assessment is included in **Attachment 4**.

Mack Energy Corporation
Arrowhead SWD #1
C-108

IX. Proposed Stimulation Program

Describe the proposed stimulation program, if any.

Treated with 10,000 gallons 15% acid.

X. Logging and Test Data

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

Logs will be run and submitted to the Division once the well is completed.

XI. Groundwater Wells

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.

Based on data obtained from the New Mexico Office of the State Engineer (OSE), a total of 1 groundwater well is located within 1 mile of the proposed SWD location. However, the well was not able to be tested, due to access.

Attachment 5 includes a 1-Mile Water Well Map

XII. No Hydrologic Connection Statement

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.

A signed affirmative statement is included in **Attachment 6**.

XIII. Proof of Notice

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

A copy of the application was mailed to the Affected Persons, including the OCD District Office, surface owner, leasehold operators within the AOR and BLM/SLO if they own minerals within the AOR. **Attachment 7** includes a list and letters of the Affected Persons receiving notice of the application and the associated certified mailing receipts.

Mack Energy Corporation
Arrowhead SWD #1
C-108

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.

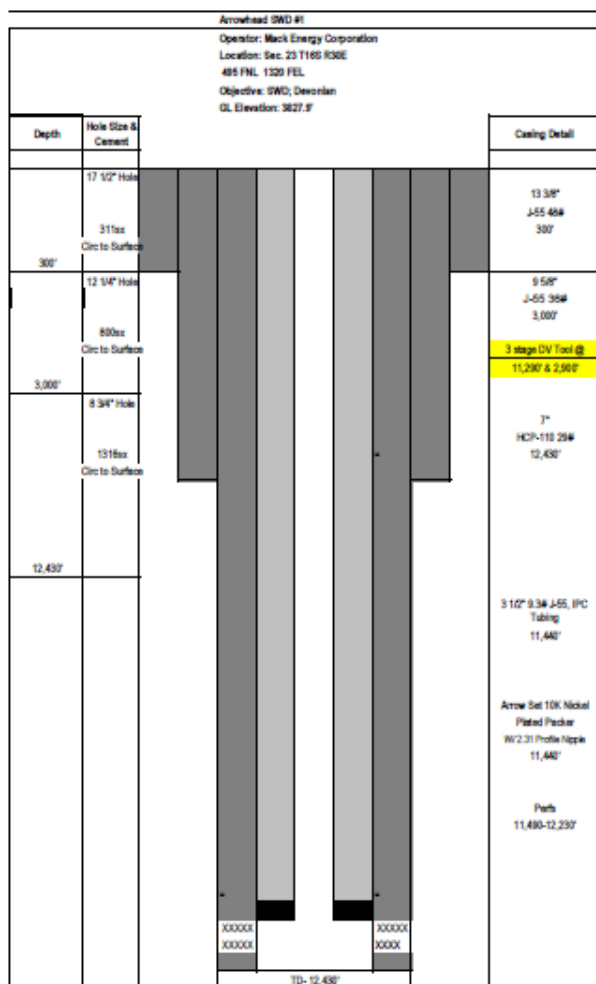
A Public Notice was published in Artesia Daily Press, a newspaper of general circulation in the area and the associated affidavit is included in **Attachment 7**.

Side 1

INJECTION WELL DATA SHEET

OPERATOR: Mack Energy CorporationWELL NAME & NUMBER: Arrowhead SWD #1

WELL LOCATION: 495 FNL 1320 FEL	A	Sec. 23	T16S	R30E
FOOTAGE LOCATION	UNIT LETTER	SECTION	TOWNSHIP	RANGE

WELLBORE SCHEMATICWELL CONSTRUCTION DATASurface CasingHole Size: 17 1/2" Casing Size: 13 3/8"Cemented with: 311 sx. **or** ft³Top of Cement: Surface Method Determined: CircIntermediate CasingHole Size: 12 1/4" Casing Size: 9 5/8"Cemented with: 800 sx. **or** ft³Top of Cement: Surface Method Determined: CircProduction CasingHole Size: 8 3/4" Casing Size: 7"Cemented with: 1316 sx. **or** ft³Top of Cement: Surface Circ Method Determined: Total Depth: 12,430'Injection Interval11,490' feet to 12,230' **Perforated**

(Perforated or Open Hole; indicate which)

Side 2

INJECTION WELL DATA SHEETTubing Size: 3 1/2", 9.3#, J-55 Lining Material: IPCType of Packer: 7" 10K Arrowset Production PackerPacker Setting Depth: 11,440'

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

Additional Data

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

If no, for what purpose was the well originally drilled? _____

2. Name of the Injection Formation: Devonian

3. Name of Field or Pool (if applicable): SWD; Devonian #96101

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. NO

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: Miss 10,675', Lower Miss 11,020', Woodford 11,470'

Devonian 11,490', Montoya 12,230'

Attachment 1

C-102 Submit Electronically Via OCD Permitting	State of New Mexico Energy, Minerals & Natural Resources Department OIL CONSERVATION DIVISION	Revised July 9, 2024	
		Submittal Type:	<input checked="" type="checkbox"/> Initial Submittal
			<input type="checkbox"/> Amended Report
			<input type="checkbox"/> As Drilled

WELL LOCATION INFORMATION

API Number	Pool Code 96101	Pool Name SWD; Devonian
Property Code	Property Name ARROWHEAD SWD	Well Number 1
OGRID No. 13837	Operator Name MACK ENERGY CORPORATION	Ground Level Elevation 3827.9
Surface Owner: <input type="checkbox"/> State <input type="checkbox"/> Fee <input type="checkbox"/> Tribal <input checked="" type="checkbox"/> Federal		Mineral Owner: <input type="checkbox"/> State <input type="checkbox"/> Fee <input type="checkbox"/> Tribal <input checked="" type="checkbox"/> Federal

Surface Location

UL A	Section 23	Township 16S	Range 30E	Lot	Ft. from N/S 495 NORTH	Ft. from E/W 1320 EAST	Latitude 32.9129393°N	Longitude 103.9381759°W	County EDDY
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Bottom Hole Location

UL A	Section 23	Township 16S	Range 30E	Lot	Ft. from N/S 495 NORTH	Ft. from E/W 1320 EAST	Latitude 32.9129393°N	Longitude 103.9381759°W	County EDDY
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Dedicated Acres 40	Infill or Defining Well Infill	Defining Well API N/A	Overlapping Spacing Unit (Y/N) N/A	Consolidation Code N/A
Order Numbers.			Well setbacks are under Common Ownership: <input type="checkbox"/> Yes <input type="checkbox"/> No	

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
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First Take Point (FTP)

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
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Last Take Point (LTP)

UL	Section	Township	Range	Lot	Ft. from N/S	Ft. from E/W	Latitude	Longitude	County
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Unitized Area or Area of Uniform Interest N/A	Spacing Unit Type <input type="checkbox"/> Horizontal <input checked="" type="checkbox"/> Vertical	Ground Floor Elevation: 3827.9'
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OPERATOR CERTIFICATIONS

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and, if the well is a vertical or directional well, that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of a working interest run leased mineral interest, or to a voluntary pooling agreement or a compulsory pooling order here to fore entered by the division.

If this well is a horizontal well, I further certify that this organization has received the consent of at least one lessee or owner of a working interest or unleased mineral interest in each tract (in the target pool or formation) in which any part of the well's completed interval will be located or obtained a compulsory pooling order from the division.

Deana Weaver

7/1/2025

Signature

Date

Deana Weaver

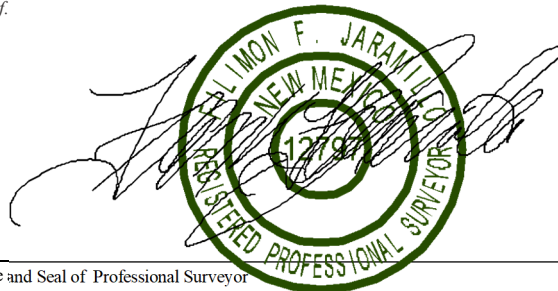
Printed Name

dweaver@mec.com

Email Address

SURVEYOR CERTIFICATIONS

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.



Signature and Seal of Professional Surveyor

FILIMON F. JARAMILLO

Certificate Number

Date of Survey

PLS 12797

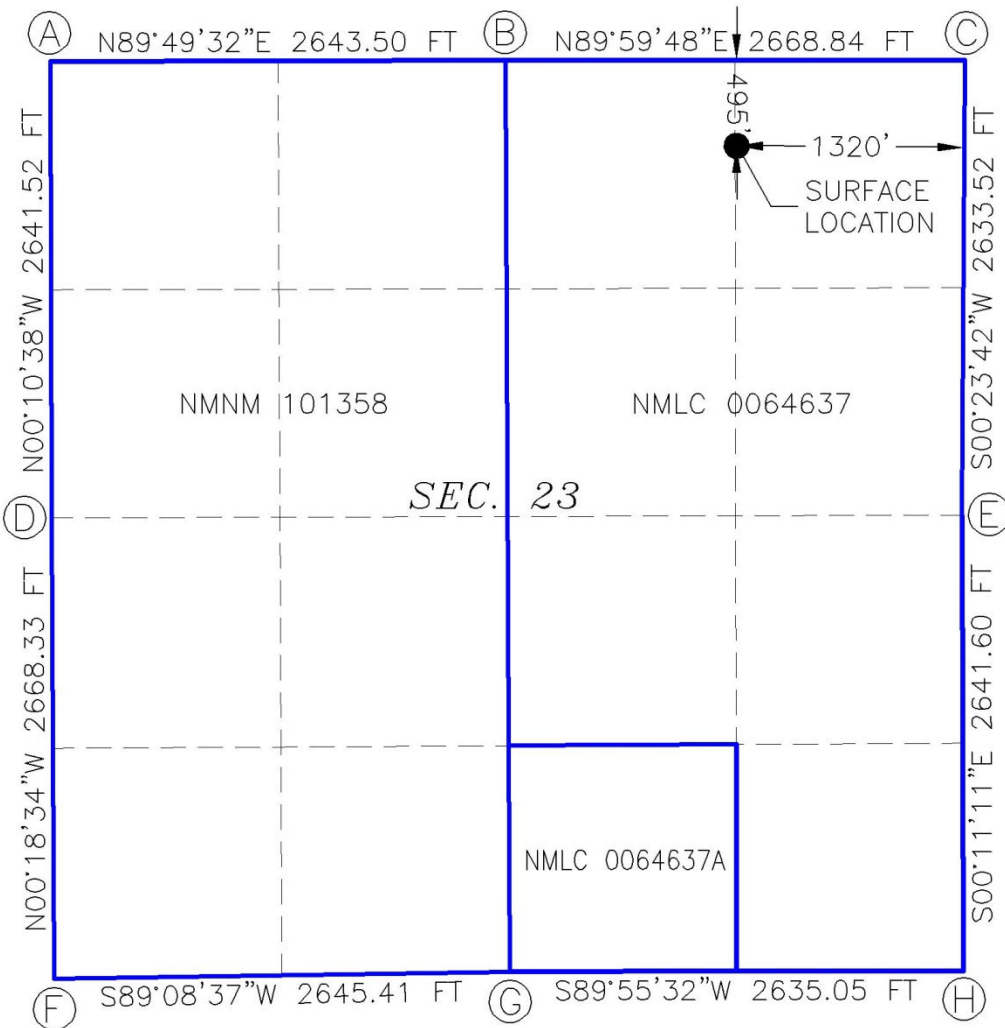
JUNE 13, 2025

SURVEY NO. 10456

Note: 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.

This grid represents a standard section. You may superimpose a non-standard section, or larger area, over this grid. Operators must outline the dedicated acreage in a red box, clearly show the well surface location and bottom hole location, if it is directionally drilled, with the dimensions from the section lines in the cardinal directions. If this is a horizontal wellbore show on this plat the location of the First Take Point and Last Take Point, and the point within the Completed interval (other than the First Take Point or Last Take Point) that is closest to any outer boundary of the tract.

Surveyors shall use the latest United States government survey or dependent resurvey. Well locations will be in reference to the New Mexico Principal Meridian. If the land is not surveyed, contact the OCD Engineering Bureau. Independent subdivision surveys will not be acceptable.



ARROWHEAD SWD 1
EL. = 3827.9

GEODETIC COORDINATES
NAD 83 NMSP EAST
SURFACE LOCATION
495' FNL, 1320' FEL
N.=696088.97
E.=662602.73
LAT.=32.9129393°N
LONG.=103.9381759°W

BOTTOM OF HOLE
495' FNL, 1320' FEL
N.=696088.97
E.=662602.73
LAT.=32.9129393°N
LONG.=103.9381759°W

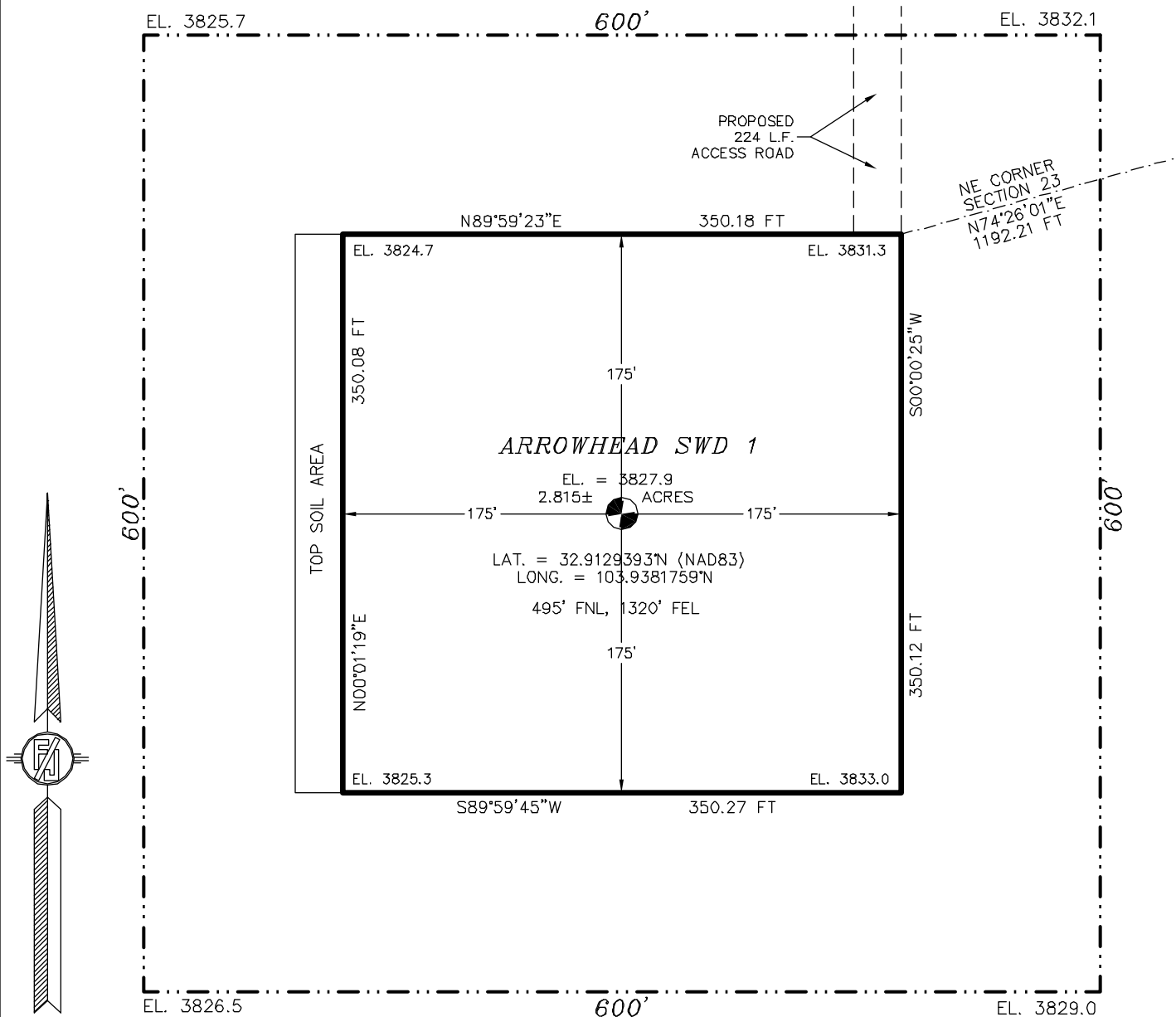
CORNER COORDINATES TABLE
NAD 83 NMSP EAST

A	N.=696575.65	E.=658615.01
B	N.=696583.70	E.=661257.82
C	N.=696583.86	E.=663925.98
D	N.=693934.82	E.=658623.18
E	N.=693951.07	E.=663907.83
F	N.=691267.21	E.=658637.59
G	N.=691306.74	E.=661282.03
H	N.=691310.16	E.=663916.41

LEGEND

--- SECTION LINE
--- QUARTER LINE
--- LEASE LINE
--- WELL PATH

ARROWHEAD SWD 1
 MACK ENERGY CORPORATION
 IN THE W/2 NE/4 NE/4 & E/2 NW/4 NE/4 OF
 SECTION 23, TOWNSHIP 16 SOUTH, RANGE 30 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 JUNE 13, 2025



010 50 100 200

SCALE 1" = 100'

GENERAL NOTES

1.) THE INTENT OF THIS SURVEY IS TO ACQUIRE A BUSINESS LEASE FOR THE PURPOSE OF BUILDING A WELL PAD

2.) BASIS OF BEARING IS NEW MEXICO STATE PLANE EAST ZONE MODIFIED TO THE SURFACE (NAD83), COORDINATES ARE NAD 83, ELEVATIONS ARE NAVD 88

DRIVING DIRECTIONS: FROM THE INTERSECTION OF CO. RD. 217 (HAGERMAN CUTOFF) & CO. RD. 253 (SHELL), GO EAST ON CO. RD. APPROX. 2.7 MILES TO A ROAD SURVEY ON RIGHT (SOUTH), FOLLOW ROAD SURVEY SOUTH APPROX. 224' TO THE NORTHEAST PAD CORNER FOR THIS LOCATION.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 13TH DAY OF JUNE 2025

FILIMON F. JARAMILLO
 12797
 NEW MEXICO PROFESSIONAL SURVEYOR

MADRON SURVEYING, INC.
 301 SOUTH CANAL
 CARLSBAD, NEW MEXICO 88220
 Phone (575) 234-3327

SURVEY NO. 10456

SHEET: 1-7

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO (575) 234-3327

ARROWHEAD SWD 1
MACK ENERGY CORPORATION
 IN THE W/2 NE/4 NE/4 & E/2 NW/4 NE/4 OF
 SECTION 23, TOWNSHIP 16 SOUTH, RANGE 30 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 JUNE 13, 2025

DESCRIPTION

A CERTAIN PIECE OR PARCEL OF LAND AND REAL ESTATE LYING IN BUREAU OF LAND MANAGEMENT LAND IN THE W/2 NE/4 NE/4 & E/2 NW/4 NE/4 OF SECTION 23, TOWNSHIP 16 SOUTH, RANGE 30 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

BEGINNING AT THE NORTHEAST CORNER OF THE PARCEL, WHENCE THE NORTHEAST CORNER OF SECTION 23, TOWNSHIP 16 SOUTH, RANGE 30 EAST, N.M.P.M. BEARS N74°26'01"E, A DISTANCE OF 1192.21 FEET;

THENCE S00°00'25"W A DISTANCE OF 350.12 FEET TO THE SOUTHEAST CORNER OF THE PARCEL;

THENCE S89°59'45"W A DISTANCE OF 350.27 FEET TO THE SOUTHWEST CORNER OF THE PARCEL;

THENCE N00°01'19"E A DISTANCE OF 350.08 FEET TO THE NORTHWEST CORNER OF THE PARCEL;

THENCE N89°59'23"E A DISTANCE OF 350.18 FEET TO THE NORTHEAST CORNER OF THE PARCEL;, THE POINT OF BEGINNING;

CONTAINING 2.815 ACRES MORE OR LESS.

GENERAL NOTES

1.) THE INTENT OF THIS SURVEY IS TO ACQUIRE A BUSINESS LEASE FOR THE PURPOSE OF BUILDING A WELL PAD

2.) BASIS OF BEARING IS NEW MEXICO STATE PLANE EAST ZONE MODIFIED TO THE SURFACE (NAD83), COORDINATES ARE NAD 83, ELEVATIONS ARE NAVD 88

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 18TH DAY OF JUNE 2025

MADRON SURVEYING, INC.
 301 SOUTH CANAL
 CARLSBAD, NEW MEXICO 88220
 Phone (575) 234-3327

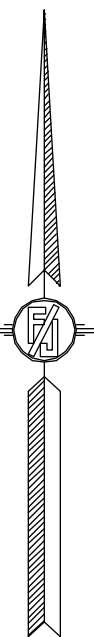
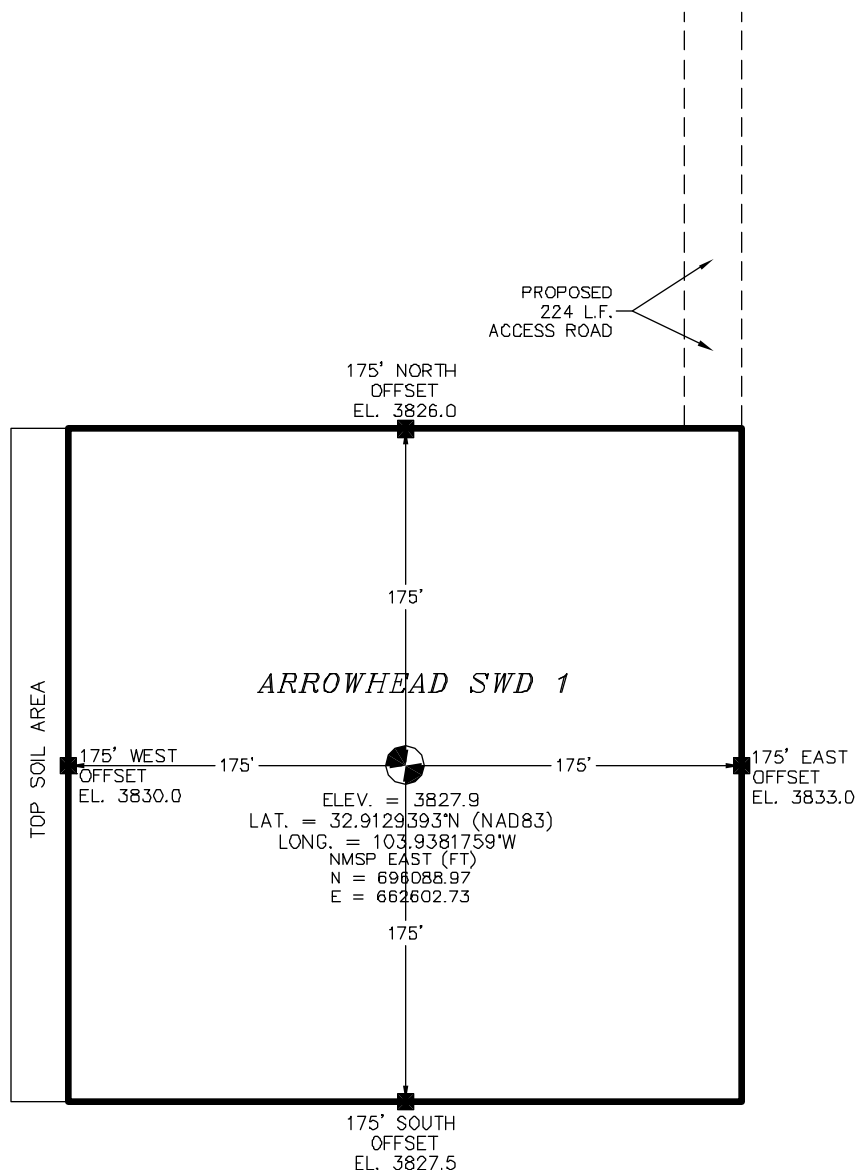
SURVEY NO. 10456

SHEET: 2-7

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO (575) 234-3327

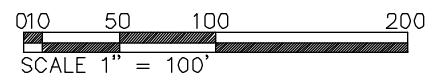
ARROWHEAD SWD 1
 MACK ENERGY CORPORATION
 IN THE W/2 NE/4 NE/4 & E/2 NW/4 NE/4 OF
 SECTION 23, TOWNSHIP 16 SOUTH, RANGE 30 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 JUNE 13, 2025

SITE MAP



I, FILIMON F. JARAMILLO, A NEW MEXICO LICENSED PROFESSIONAL SURVEYOR CERTIFY THAT I DIRECTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYS IN NEW MEXICO.

FILIMON F. JARAMILLO, REGISTERED PROFESSIONAL SURVEYOR



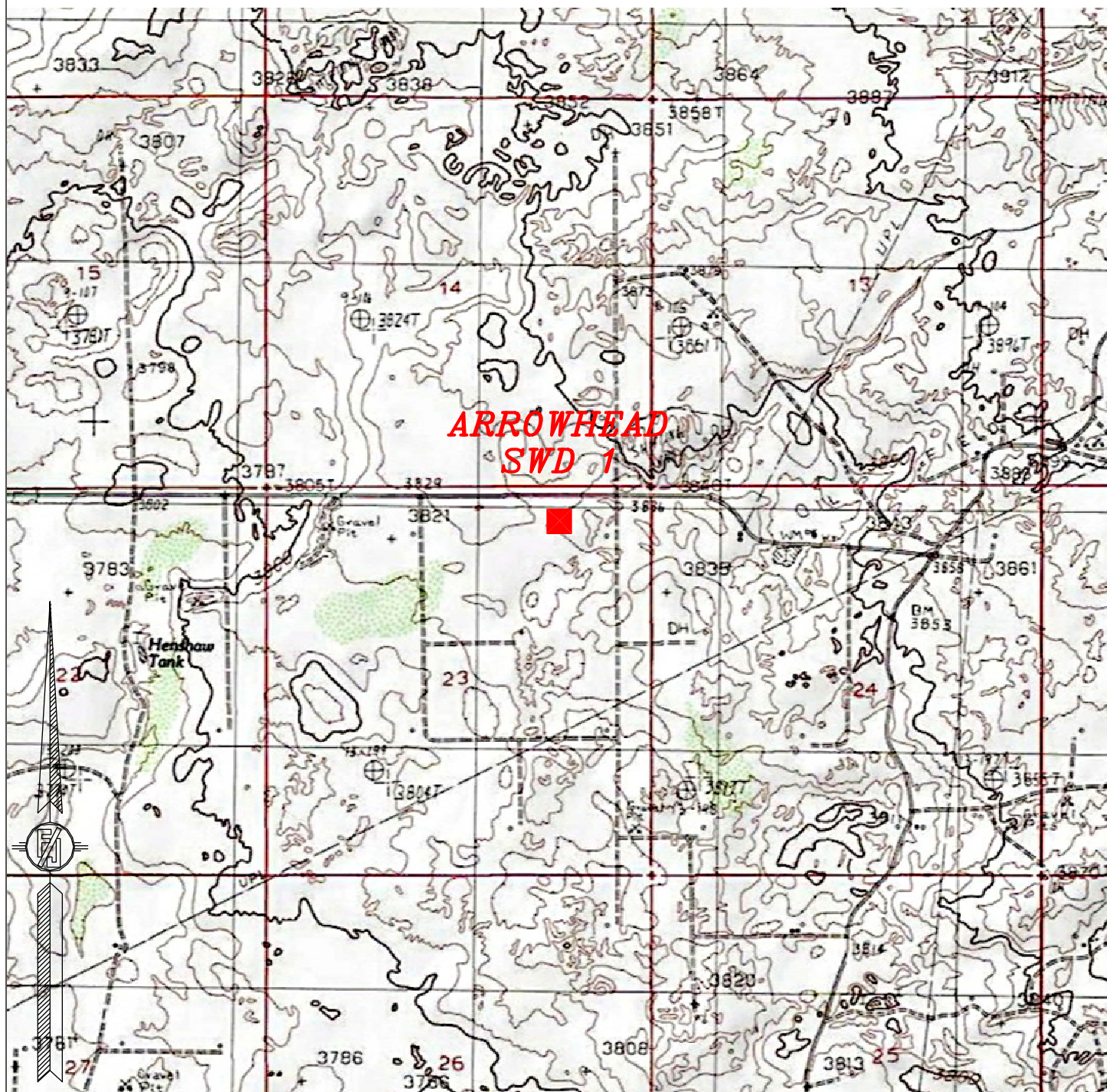
SHEET: 3

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3327 CARLSBAD, NEW MEXICO

SURVEY NO. 10456

ARROWHEAD SWD 1
 MACK ENERGY CORPORATION
 IN THE W/2 NE/4 NE/4 & E/2 NW/4 NE/4 OF
 SECTION 23, TOWNSHIP 16 SOUTH, RANGE 30 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 JUNE 13, 2025

LOCATION VERIFICATION MAP



NOT TO SCALE

SHEET: 4-7

SURVEY NO. 10456

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3327 CARLSBAD, NEW MEXICO

ARROWHEAD SWD 1
 MACK ENERGY CORPORATION
 IN THE W/2 NE/4 NE/4 & E/2 NW/4 NE/4 OF
 SECTION 23, TOWNSHIP 16 SOUTH, RANGE 30 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 JUNE 13, 2025

AERIAL ACCESS ROUTE MAP



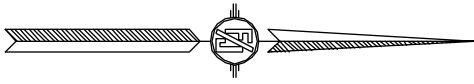
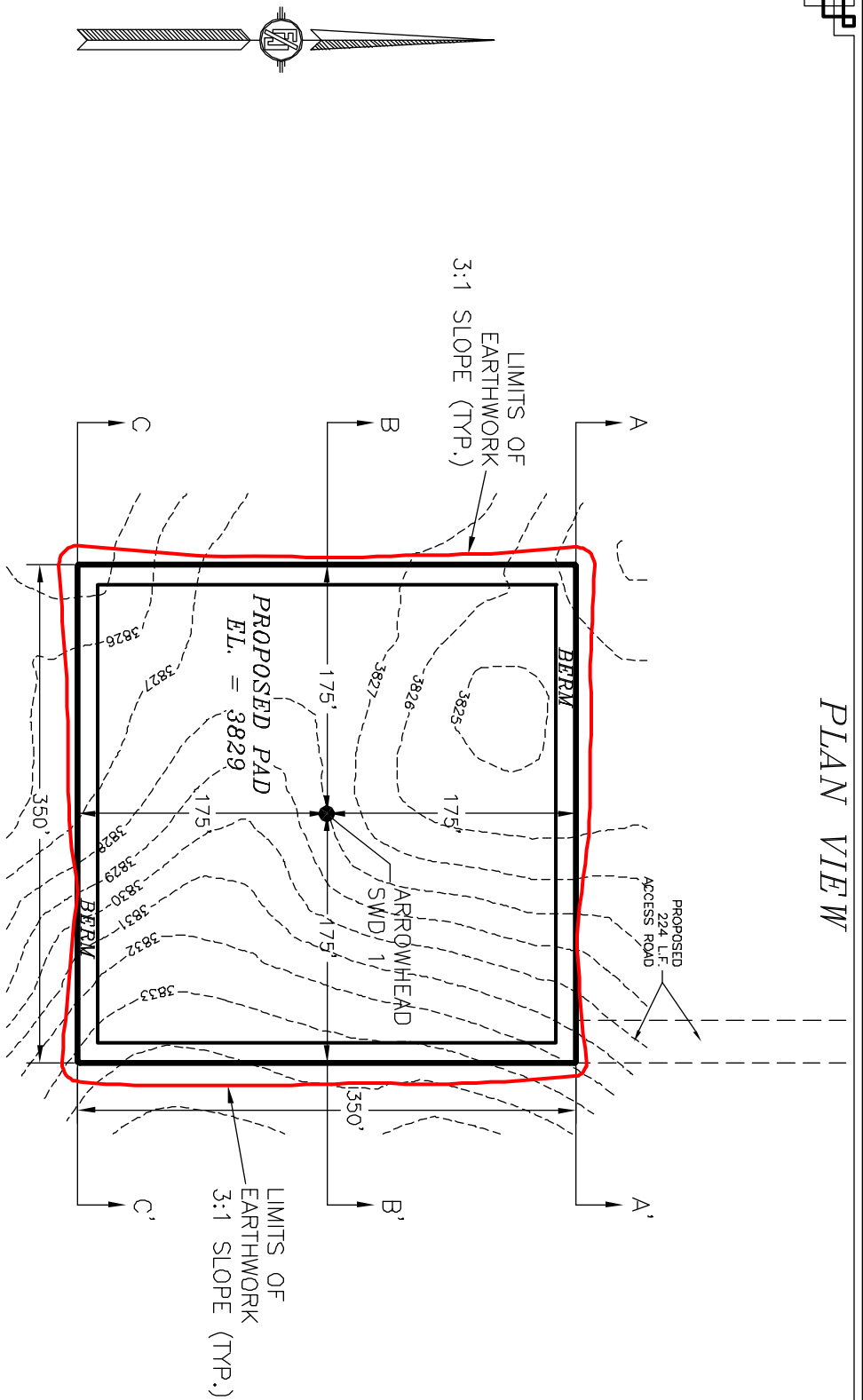
NOT TO SCALE
 AERIAL PHOTO:
 GOOGLE EARTH

DRIVING DIRECTIONS: FROM THE INTERSECTION OF CO. RD. 217 (HAGERMAN CUTOFF) & CO. RD. 253 (SHELL), GO EAST ON CO. RD. APPROX. 2.7 MILES TO A ROAD SURVEY ON RIGHT (SOUTH), FOLLOW ROAD SURVEY SOUTH APPROX. 224' TO THE NORTHEAST PAD CORNER FOR THIS LOCATION.

SHEET: 5-7

SURVEY NO. 10456

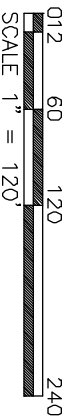
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3327 CARLSBAD, NEW MEXICO



I, FILMON F. JARAN, NEW MEXICO REGISTERED PROFESSIONAL SURVEYOR CERTIFICATE NO. 12297, AM RESPONSIBLE FOR THIS SURVEY, THAT THE SURVEYING AND PLAT TO THE BEST OF MY KNOWLEDGE AND BELIEF MEET THE STANDARDS FOR SURVEYING IN NEW MEXICO.



MACK ENERGY CORPORATION
PAD ELEVATIONS AND CROSS SECTIONS
FOR ARROWHEAD SWD 1
SECTION 23, TOWNSHIP 16 SOUTH,
RANGE 30 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO



CUT	FILL	NET
4298 CU. YD	6775 CU. YD	2477 CU. YD (FILL)

EARTHWORK QUANTITIES ARE ESTIMATED

JUNE 13, 2025
301 SOUTH CANAL
(979) 234-3327
CARLSBAD, NEW MEXICO

SHEET 6-7
SURVEY NO. 10456

SECTION A-A'



CUT	FILL	NET
3 CU. YD	6775 CU. YD	2477 CU. YD (FILL)

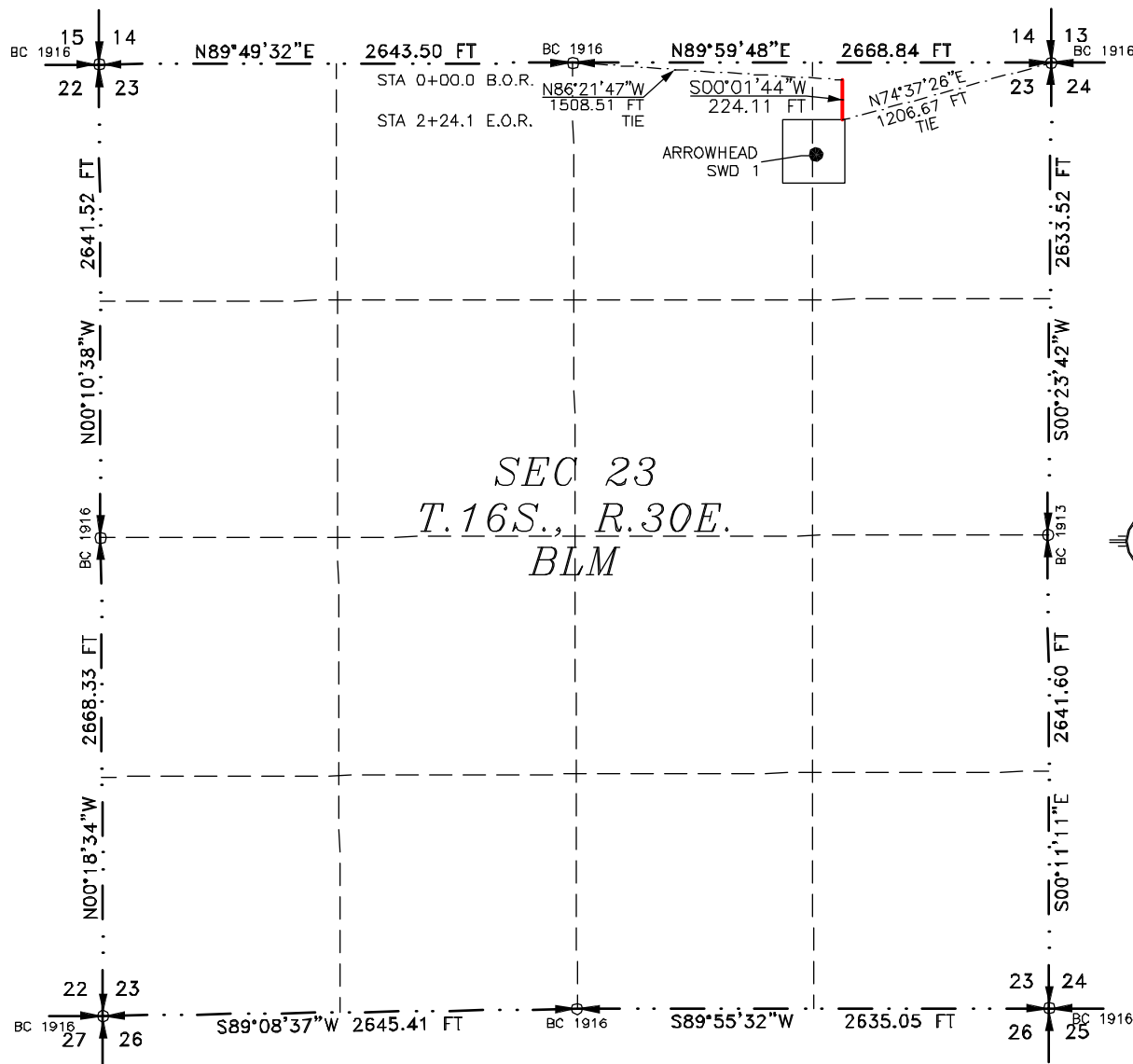
EARTHWORK QUANTITIES ARE ESTIMATED

012 60 120 240
SCALE 1" = 120' - 1" = 20' VER

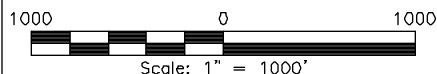
JUNE 13, 2025
301 SOUTH CANAL
CARLSBAD, NEW MEXICO
(976) 234-3327
SHEET 7 -
SURVEY NO. 10456

ACCESS ROAD PLAT
ACCESS ROAD FOR ARROWHEAD SWD 1

MACK ENERGY CORPORATION
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 23, TOWNSHIP 16 SOUTH, RANGE 30 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JUNE 13, 2025



SEE NEXT SHEET (2-2) FOR DESCRIPTION



GENERAL NOTES

- 1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.
- 2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SHEET: 1-2

MADRON SURVEYING, INC.

SURVEYOR CERTIFICATE

I, FILMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 18TH DAY OF JUNE 2025

FILMON F. JARAMILLO, PLS
 301 SOUTH CANAL
 (575) 234-3327

MADRON SURVEYING, INC.
 301 SOUTH CANAL
 CARLSBAD, NEW MEXICO 88220
 Phone (575) 234-3327

SURVEY NO. 10456

ACCESS ROAD PLAT
ACCESS ROAD FOR ARROWHEAD SWD 1

MACK ENERGY CORPORATION
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 23, TOWNSHIP 16 SOUTH, RANGE 30 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JUNE 13, 2025

DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 23, TOWNSHIP 16 SOUTH, RANGE 30 EAST, N.M.P.M., EDDY COUNTY, STATE OF NEW MEXICO AND BEING 15 FEET EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY:

BEGINNING AT A POINT WITHIN THE NE/4 NE/4 OF SAID SECTION 23, TOWNSHIP 16 SOUTH, RANGE 30 EAST, N.M.P.M., WHENCE THE NORTH QUARTER CORNER OF SAID SECTION 23, TOWNSHIP 16 SOUTH, RANGE 30 EAST, N.M.P.M. BEARS N86°21'47"W, A DISTANCE OF 1508.51 FEET;
THENCE S00°01'44"W A DISTANCE OF 224.11 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHEAST CORNER OF SAID SECTION 23, TOWNSHIP 16 SOUTH, RANGE 30 EAST, N.M.P.M. BEARS N74°37'26"E, A DISTANCE OF 1206.67 FEET;

SAID STRIP OF LAND BEING 244.11 FEET OR 13.58 RODS IN LENGTH, CONTAINING 0.154 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NE/4 NE/4 244.11 L.F. 13.58 RODS 0.154 ACRES

GENERAL NOTES

- 1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.
- 2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SHEET: 2-2

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO 88220
(575) 234-3327

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 14th DAY OF JUNE 2025

FILIMON F. JARAMILLO
FILIMON F. JARAMILLO, PLS
12797
NEW MEXICO PROFESSIONAL SURVEYOR

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3327

SURVEY NO. 10456

Arrowhead SWD #1
495 FNL 1320 FEL
Sec. 23 T16S R30E
Formation Tops

Rustler	270'
Top Salt	435'
Base Salt	1,300'
Yates	1,470'
Seven Rivers	1,715'
Queen	2,280'
Grayburg	2,680'
San Andres	3,005'
Glorieta	4,460'
Tubb	5,715'
Abo	6,375'
Wolfcamp	7,690'
Cisco	8,945'
Strawn	10,050'
Atoka	10,285'
Morrow	10,505'
Miss	10,675'
L. Miss	11,020'
Woodford	11,470'
Devonian	11,490'
Montoya	12,230'

Released to Imaging: 10/10/2025 3:01:36 PM

Attachment 7

Affidavit of PublicationNo. 59960

State of New Mexico

Publisher

County of Eddy:

Adrian Hedden

being duly sworn, says that he is the

Publisher

of the Artesia Daily Press, a weekly newspaper of General

circulation, published in English at Artesia,

said county and state, and that the hereto attached

Legal Ad

was published in a regular and entire issue of the said

Artesia Daily Press, a weekly newspaper duly qualified

for that purpose within the meaning of Chapter 167 of

the 1937 Session Laws of the state of New Mexico for

1 Consecutive weeks/day on the same

day as follows:

First Publication

August 28, 2025

Second Publication

Third Publication

Fourth Publication

Fifth Publication

Sixth Publication

Seventh Publication

Eighth Publication

Subscribed and sworn before me this

28th day of August 2025

LATISHA ROMINE
 Notary Public, State of New Mexico
 Commission No. 1076338
 My Commission Expires
 05-12-2027

Latisha Romine

Latisha Romine

Notary Public, Eddy County, New Mexico

Copy of Publication:**Public Notices****Legal Notice**

Mack Energy Corporation, Post Office Box 960, Artesia, NM 88211-0960, has filed an Application with the New Mexico Oil Conservation Division seeking authorization to inject produced water into the Arrowhead SWD #1 495 FNL 1320 FEL of Section 23, T16S, R30E, NMPM, Eddy County, New Mexico. The water will be injected into the Devonian at a disposal depth of 11,490-12,230 (Perforated). Water will be injected at a maximum surface pressure of 2,298# and a maximum injection rate of 15,000-20,000 BWPD. Any interested party with questions or comments may contact Deana Weaver at Mack Energy Corporation, Post

Office Box 960, Artesia, NM 88211-0960 or call 575-748-1288. 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 days of the date of publication of this notice.
 59960-Published in Artesia Daily Press Aug. 28, 2025.

Legal Notice

Mack Energy Corporation, Post Office Box 960, Artesia, NM 88211-0960, has filed an Application with the New Mexico Oil Conservation Division seeking authorization to inject produced water into the Arrowhead SWD #1 495 FNL 1320 FEL of Section 23, T16S, R30E, NMPM, Eddy County, New Mexico. The water will be injected into the Devonian at a disposal depth of 11,490-12,230 (Perforated). Water will be injected at a maximum surface pressure of 2,298# and a maximum injection rate of 15,000-20,000 BWPD. Any interested party with questions or comments may contact Deana Weaver at Mack Energy Corporation, Post Office Box 960, Artesia, NM 88211-0960 or call 575-748-1288. 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 days of the date of publication of this notice.
59960-Published in Artesia Daily Press Aug. 28, 2025.

Statement of Affected Person Notification

C-108

Arrowhead SWD #1

Mack Energy Corporation

Proposed Disposal Well

Name	Address	City	State	Zip	Certified Mail Id
Bureau of Land Management	620 E. Greene St.	Carlsbad	NM	88220-6292	9589 0710 5270 2983 5597 49
Commissioner of Public Lands	P.O. Box 1148	Santa Fe	NM	87504-1148	9589 0710 5270 2983 5597 32
Oleum Energy LLC	2955 Dawn Dr. Ste 104	Georgetown	TX	78628	9589 0710 5270 2983 5597 56
Cimarex Energy Co. of Colorado	6001 Deauville Blvd. Suite 300N	Mildand	TX	79706	9589 0710 5270 2983 5597 63
Armstrong Energy Corp	P.O. Box 1973	Roswell	NM	88202	9589 0710 5270 2983 5597 70
Southwest Royalties Inc	P.O. Box 53570	Midland	TX	79710	9589 0710 5270 2983 5597 87
Hanson-McBride Petroleum Co LLC	P.O. Box 1515	Roswell	NM	88202-1515	9589 0710 5270 2983 5595 65
EOG Resources Inc	1111 Bagby St Sky Lobby 2	Houston	TX	77002	9589 0710 5270 2983 5595 72
Maverick Permian Agent Corp	1000 Main Street Suite 12900	Houston	TX	77002	9589 0710 5270 2983 5595 89
ZPZ Delaware I LLC	2000 Post Oak Blvd Ste 100	Houston	TX	77056-4497	9589 0710 5270 2983 5595 96
Trigg Oil & Gas LP	P.O. Box 520	Roswell	NM	88202-0520	9589 0710 5270 2983 5596 02
Earthstone Permian LLC	1400 Woodloch Forest Dr. Ste 300	The Woodlands	TX	77380	9589 0710 5270 2983 5596 19
Slash Exploration LP	P.O. Box 1973	Roswell	NM	88202	9589 0710 5270 2983 5596 26
XTO Holdings LLC	22777 Springwoods Village PKWY	Spring	TX	77389-1425	9589 0710 5270 2983 5596 33
WPX Energy Permian LLC	333 West Sheridan Ave	Oklahoma City	OK	73102	9589 0710 5270 2983 5596 40
Pioneer Natural Resources Inc	3617 N. Big Spring St	Midland	TX	79705-4569	9589 0710 5270 2983 5596 57
SEP Permian Holding Corp	9655 Katy FWY Ste 500	Houston	TX	77024	9589 0710 5270 2983 5596 64
J Cleo Thompson & James Cleo Thompson JR LP	326 N. Saint Paul St Ste 4300	Dallas	TX	75201-3806	9589 0710 5270 2983 5596 71
Apache Corporation	2000 W. Sam Houston PKWY S Ste 200	Houston	TX	77042	9589 0710 5270 2983 5596 88
Chisos LTD	3355 W. Alabama Suite 1200 B	Houston	TX	77098	9589 0710 5270 2983 5596 95
Cross Border Resources Inc	14282 Gillis RD	Farmers Branch	TX	75244-3715	9589 0710 5270 2983 5597 01
Merit Energy Company LLC	13727 Noel Road Suite 500	Dallas	TX	75240	9589 0710 5270 2983 5597 18
Devon Energy Co LP	333 W. Sheridan Ave	Oklahoma City	OK	73102	9589 0710 5270 2983 5597 25
Ledbetter HJ Trust	10988 US Sheridan Ave	Abilene	TX	79606-6934	9589 0710 5270 2983 5597 94
Mewbourne Oil Co	3620 Old Bullard Rd	Tyler	TX	75701-8644	9589 0710 5270 2983 5598 00
Bright & Company LLC	2520 King Arthur Blvd Ste 200	Lewisville	TX	75056-6082	9589 0710 5270 2983 5598 17
HRB Oil & Gas LTD	6310 Lemmon Ave 222	Dallas	TX	75205	9589 0710 5270 2983 5598 24
Reeder Energy LTD	4925 Greenville Ave #880	Dallas	TX	75206	9589 0710 5270 2983 5598 31
Promontory Exploration LP	400 N. Wall St Ste 300	Midland	TX	79701	9589 0710 5270 2983 5598 48
Oxy USA WTP LP	5 Greenway PLZ Ste 110	Houston	TX	77046-0521	9589 0710 5270 2983 5598 55
Summit Overseas Expl	777 S. Wadsworth Blvd	Lakewood	CO	80226	9589 0710 5270 2983 5598 62
National Coop Refinery	1775 Sheman St Ste 3000	Denver	CO	80203-4341	9589 0710 5270 2983 5598 79
MNA Enterprise LTD Co	106 W. Alabama St	Hobbs	NM	88242-8558	9589 0710 5270 2983 5598 86
Shelmar E&P NM LP	P.O. Box 3176	Midland	TX	79702-3176	9589 0710 5270 0175 5629 59
Chase Oil Corporation	P.O. Box 1767	Artesia	NM	88210	



P.O. Box 960
Artesia, NM 88211-0960
Office (575) 748-1288
Fax (575) 748-7374

March 23, 2022

Mr. Dean McClure
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

RE: Mack Energy Corporation & Chase Affiliates

Dear Mr. McClure:

Mack Energy Corporation is a Chase Family owned entity. The following Chase individuals or companies are all affiliates of Mack Energy Corporation and usually own an interest in wells drilled and/or operated by Mack Energy Corporation.

- Mack C. Chase Trust
- Robert C. Chase or RDC Minerals LLC
- Richard L. Chase or Ventana Minerals LLC
- Gerene Dianne Chase Ferguson or DiaKan Minerals LLC
- Broken Arrow Royalties LLC
- Chase Oil Corporation
- Sendero Energy LLC
- Katz Resources LLC
- M Squared Energy LLC

All of these family members and companies all office in the same building so notifications can be hand delivered; therefore we request that the certified mail process be waived when these parties are involved.

If you have any questions or need additional information please do not hesitate to contact me. Your assistance is greatly appreciated.

Sincerely,
Mack Energy Corporation

A handwritten signature in black ink that reads "Staci Sanders".
Staci Sanders
Land Manager

/ss

Re: Application of Mack Energy Corporation for administrative approval for Central Tank Battery and Off Lease Measurement of oil and gas production at a CTB Facility located in Section 28, Township 15S Range 29E, NMPM, Chaves County, New Mexico.

List of Affected Parties

Sendero Energy LLC

Katz Resources LLC

M Squared Energy LLC

Chase Oil Corp

Robert C Chase

Broken Arrow Royalties LLC

Ventana Minerals LLC

DiaKan Minerals LLC

Bureau of Land Management



P.O. Box 960
Artesia, NM 88211-0960
Office (575) 748-1288
Fax (575) 746-9539

October 7, 2025

Via Certified Mail 9589 0710 5270 2983 5597 01

Return Receipt Requested

Cross Border Resources Inc
14282 Gillis Rd.
Farmers Branch, TX 75244-3715

To all Interest Owners:

Enclosed for your review is a copy of Mack Energy Corporation's application for a Devonian SWD well. Produced water will be injected at a proposed depth of 11,490-12,230'. The Arrowhead SWD #1 located 495 FNL & 1320 FEL, Sec. 23 T16S R30E, Eddy County.

The letter will serve as a notice that Mack Energy Corporation has requested administrative approval from the NMOCD to drill this well as a water disposal. If you have any objections, you must notify the Oil Conservation Division in Santa Fe in writing at 1220 South St. Francis Drive, Santa Fe, NM 87505 within fifteen (15) days of receiving this letter.

Sincerely,

Mack Energy Corporation

A handwritten signature in black ink that reads "Deana Weaver". The script is cursive and fluid.

Deana Weaver
Regulatory Technician II

DW/

Attachments



P.O. Box 960
Artesia, NM 88211-0960
Office (575) 748-1288
Fax (575) 746-9539

October 7, 2025

Via Certified Mail 9589 0710 5270 2983 5597 18

Return Receipt Requested

Merit Energy Company LLC
13727 Noel Rd. Suite 500
Dallas, TX 75240

To all Interest Owners:

Enclosed for your review is a copy of Mack Energy Corporation's application for a Devonian SWD well. Produced water will be injected at a proposed depth of 11,490-12,230'. The Arrowhead SWD #1 located 495 FNL & 1320 FEL, Sec. 23 T16S R30E, Eddy County.

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Sincerely,

Mack Energy Corporation

A handwritten signature in black ink that reads "Deana Weaver".

Deana Weaver
Regulatory Technician II

DW/

Attachments



P.O. Box 960
Artesia, NM 88211-0960
Office (575) 748-1288
Fax (575) 746-9539

October 7, 2025

Via Certified Mail 9589 0710 5270 2983 5597 25

Return Receipt Requested

Devon Energy Co LP
333 W. Sheridan Ave
Oklahoma City, OK 73102

To all Interest Owners:

Enclosed for your review is a copy of Mack Energy Corporation's application for a Devonian SWD well. Produced water will be injected at a proposed depth of 11,490-12,230'. The Arrowhead SWD #1 located 495 FNL & 1320 FEL, Sec. 23 T16S R30E, Eddy County.

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Sincerely,

Mack Energy Corporation

A handwritten signature in black ink that reads "Deana Weaver". The signature is written in a cursive, flowing style.

Deana Weaver
Regulatory Technician II

DW/

Attachments



P.O. Box 960
Artesia, NM 88211-0960
Office (575) 748-1288
Fax (575) 746-9539

October 7, 2025

Via Certified Mail 9589 0710 5270 2983 5596 88

Return Receipt Requested

Apache Corporation
2000 W. Sam Houston PKWY S Ste 200
Houston, TX 77042

To all Interest Owners:

Enclosed for your review is a copy of Mack Energy Corporation's application for a Devonian SWD well. Produced water will be injected at a proposed depth of 11,490-12,230'. The Arrowhead SWD #1 located 495 FNL & 1320 FEL, Sec. 23 T16S R30E, Eddy County.

The letter will serve as a notice that Mack Energy Corporation has requested administrative approval from the NMOCD to drill this well as a water disposal. If you have any objections, you must notify the Oil Conservation Division in Santa Fe in writing at 1220 South St. Francis Drive, Santa Fe, NM 87505 within fifteen (15) days of receiving this letter.

Sincerely,

Mack Energy Corporation

A handwritten signature in black ink that reads "Deana Weaver". The signature is written in a cursive style with a large, stylized 'D'.

Deana Weaver
Regulatory Technician II

DW/

Attachments



P.O. Box 960
Artesia, NM 88211-0960
Office (575) 748-1288
Fax (575) 746-9539

October 7, 2025

Via Certified Mail 9589 0710 5270 2983 5596 95

Return Receipt Requested

Chisos LTD
3355 W. Alabama
Suite 1200 B
Houston, TX 77098

To all Interest Owners:

Enclosed for your review is a copy of Mack Energy Corporation's application for a Devonian SWD well. Produced water will be injected at a proposed depth of 11,490-12,230'. The Arrowhead SWD #1 located 495 FNL & 1320 FEL, Sec. 23 T16S R30E, Eddy County.

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Sincerely,

Mack Energy Corporation

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Deana Weaver
Regulatory Technician II

DW/

Attachments



P.O. Box 960
Artesia, NM 88211-0960
Office (575) 748-1288
Fax (575) 746-9539

October 7, 2025

Via Certified Mail 9589 0710 5270 2983 5596 71

Return Receipt Requested

J Cleo Thompson
James Cleo Thompson JR LP
326 N. Saint Paul St. Ste 4300
Dallas, TX 75201-3806

To all Interest Owners:

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Sincerely,

Mack Energy Corporation

A handwritten signature in black ink that reads "Deana Weaver". The signature is written in a cursive, flowing style.

Deana Weaver
Regulatory Technician II

DW/

Attachments



P.O. Box 960
Artesia, NM 88211-0960
Office (575) 748-1288
Fax (575) 746-9539

October 7, 2025

Via Certified Mail 9589 0710 5270 2983 5596 64

Return Receipt Requested

SEP Permian Holding Corp
9655 Katy FWY Ste 500
Houston, TX 77024

To all Interest Owners:

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October 7, 2025

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WPX Energy Permian LLC
333 West Sheridan Ave
Oklahoma City, OK 73102

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October 7, 2025

Via Certified Mail 9589 0710 5270 2983 5596 57

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Pioneer Natural Resources Inc
3617 N. Big Spring St
Midland, TX 79705-4569

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October 7, 2025

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XTO Holding LLC
22777 Springwoods Village PKWY
Spring, TX 77389-1425

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October 7, 2025

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Slash Explorations LP
P.O. Box 1973
Roswell, NM 88202

To all Interest Owners:

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October 7, 2025

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Return Receipt Requested

Earthstone Permian LLC
1400 Woodloch Forest Dr. Ste 300
The Woodlands, TX 77380

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October 7, 2025

Via Certified Mail 9589 0710 5270 2983 5595 96

Return Receipt Requested

ZPZ Delaware I LLC
2000 Post Oak Blvd Ste 100
Houston, TX 77056-4497

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October 7, 2025

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Return Receipt Requested

Trigg Oil & Gas LP
P.O. Box 520
Roswell, NM 88202-0520

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October 7, 2025

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Maverick Permian Agent Corp
1000 Main Street Suite 12900
Houston, TX 77002

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Regulatory Technician II

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October 7, 2025

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EOG Resources Inc
1111 Bagby St Sky Lobby 2
Houston, TX 77002

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October 7, 2025

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Return Receipt Requested

Southwest Royalties Inc
P.O. Box 53570
Midland, TX 79710

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October 7, 2025

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Return Receipt Requested

Hanson-McBride Petroleum Co LLC
P.O. Box 1515
Roswell, NM 88202-1515

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October 7, 2025

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Bureau of Land Management
620 E. Greene St.
Carlsbad, NM 88220-6292

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October 7, 2025

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Cimarex Energy Co. Of Colorado
6001 Deauville Blvd. Suite 300N
Midland, TX 79706

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October 7, 2025

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Oleum Energy LLC
2955 Dawn Dr. Ste 104
Georgetown, TX 78628

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Armstrong Energy Corp
P.O. Box 1973
Roswell, NM 88202

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Commissioner of Public Lands
New Mexico State Land Office
P.O. Box 1148
Santa Fe, NM 87504-1148

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Ledbetter HJ Trust
10988 US Sheridan Ave
Abilene, TX 79606-6934

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Mewbourne Oil Co
3620 Old Bullard Rd
Tyler, TX 75701-8644

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Bright & Company LLC
2520 King Arthur Blvd
Suite 200
Lewisville, TX 75056-6082

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HRB Oil & Gas LTD
6310 Lemmon Ave 222
Dallas, TX 75205

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Reeder Energy LTD
4925 Greenville Ave #880
Dallas, TX 75206

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Promontory Exploration LP
400 N. Wall St Ste 300
Midland, TX 79701

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Oxy USA WTP LP
5 Greenway PLZ Ste 110
Houston, TX 77046-0521

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Return Receipt Requested

Summit Overseas Explore
777 S. Wadsworth Blvd.
Lakewood, CO 80226

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Sincerely,

Mack Energy Corporation

A handwritten signature in black ink that reads "Deana Weaver". The signature is written in a cursive style with a large, sweeping "D" and a checkmark-like flourish at the end.

Deana Weaver
Regulatory Technician II

DW/

Attachments



P.O. Box 960
Artesia, NM 88211-0960
Office (575) 748-1288
Fax (575) 746-9539

October 7, 2025

Via Certified Mail 9589 0710 5270 2983 5598 79

Return Receipt Requested

National Coop Refinery
1775 Sheman St. Ste 3000
Denver, CO 80203-4341

To all Interest Owners:

Enclosed for your review is a copy of Mack Energy Corporation's application for a Devonian SWD well. Produced water will be injected at a proposed depth of 11,490-12,230'. The Arrowhead SWD #1 located 495 FNL & 1320 FEL, Sec. 23 T16S R30E, Eddy County.

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October 7, 2025

Via Certified Mail 9589 0710 5270 2983 5598 86

Return Receipt Requested

MNA Enterprise LTD Co
106 W. Alabama St
Hobbs, NM 88242-8558

To all Interest Owners:

Enclosed for your review is a copy of Mack Energy Corporation's application for a Devonian SWD well. Produced water will be injected at a proposed depth of 11,490-12,230'. The Arrowhead SWD #1 located 495 FNL & 1320 FEL, Sec. 23 T16S R30E, Eddy County.

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Deana Weaver
Regulatory Technician II

DW/

Attachments



P.O. Box 960
Artesia, NM 88211-0960
Office (575) 748-1288
Fax (575) 746-9539

October 7, 2025

Via Certified Mail 9589 0710 5270 0175 5629 59

Return Receipt Requested

Shelmar E&P NM LP
P.O. Box 3176
Midland, TX 79702-3176

To all Interest Owners:

Enclosed for your review is a copy of Mack Energy Corporation's application for a Devonian SWD well. Produced water will be injected at a proposed depth of 11,490-12,230'. The Arrowhead SWD #1 located 495 FNL & 1320 FEL, Sec. 23 T16S R30E, Eddy County.

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Sincerely,

Mack Energy Corporation

A handwritten signature in black ink that reads "Deana Weaver". The signature is written in a cursive, flowing style.

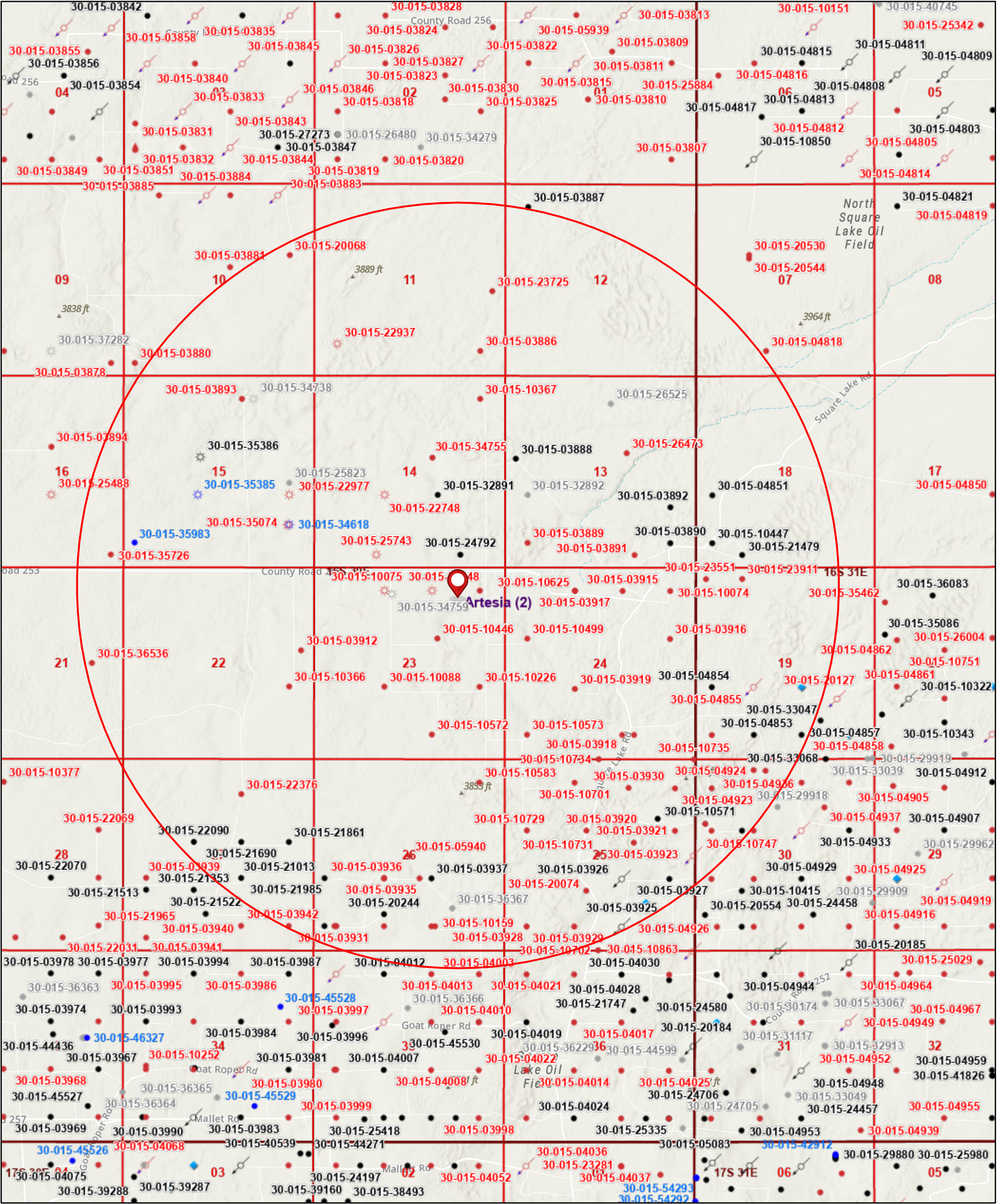
Deana Weaver
Regulatory Technician II

DW/

Attachments

Attachment 2

2 Mile Well Map

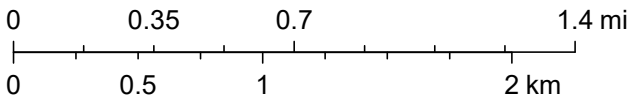


6/24/2025, 8:43:52 AM

Wells - Large Scale

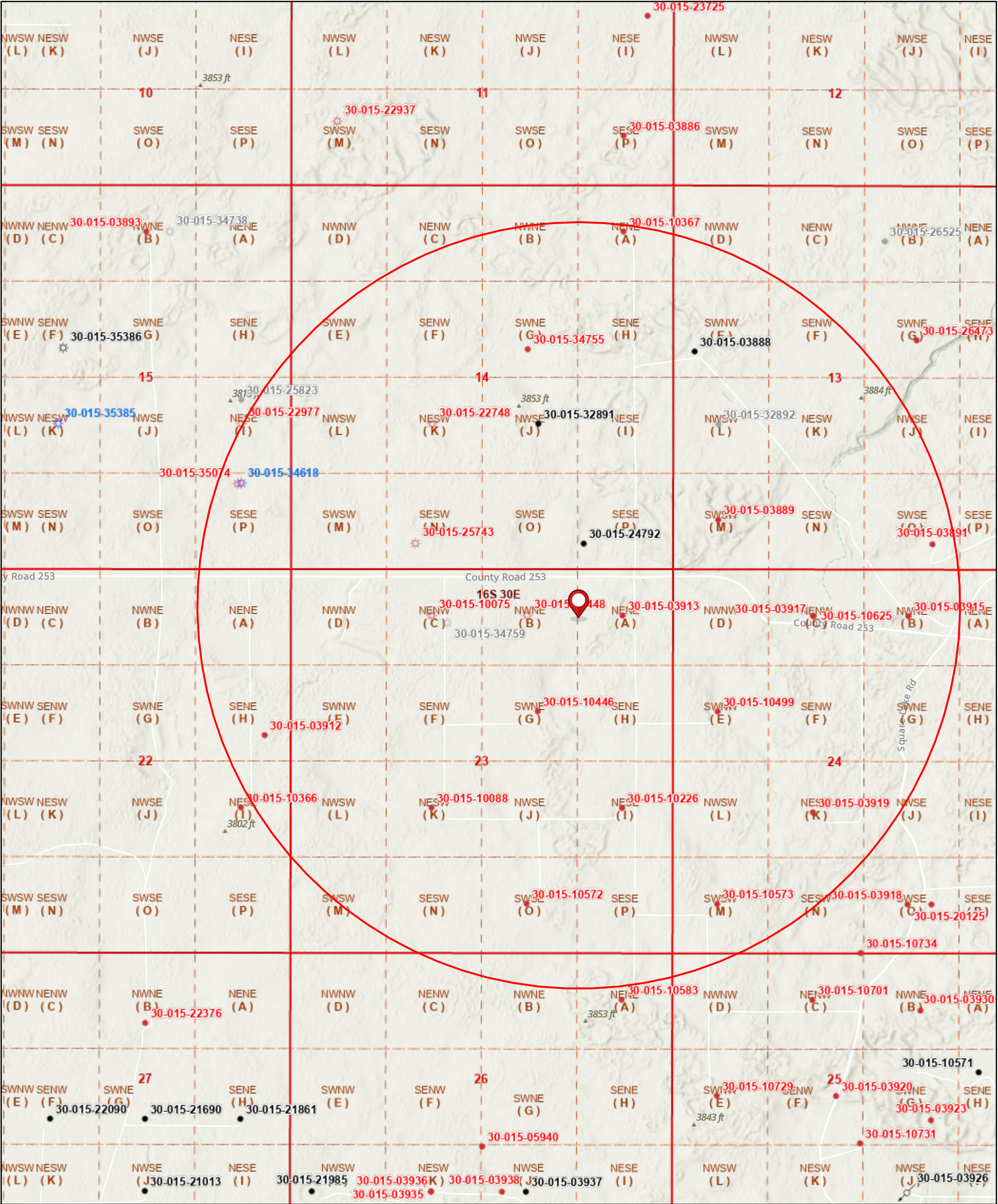
- Gas, Active
- Gas, Cancelled
- Gas, New
- Gas, Plugged
- Injection, Active
- Injection, Plugged
- Oil, Active
- Oil, Cancelled
- Oil, New
- Oil, Plugged
- Water, Plugged
- undefined
- OCD Districts
- PLSS First Division
- PLSS Townships

1:36,112



Esri, NASA, NGA, USGS, FEMA, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, OCD, BLM

1 Mile Well Map



6/24/2025, 11:58:08 AM

Wells - Large Scale

- ☆

Gas, Active
- ☆

Gas, Cancelled
- ☆

Gas, New
- ⚡

Gas, Plugged
- ⚡

Injection, Active
- Oil, Active
- Oil, Cancelled

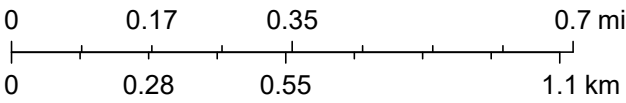
- Oil, Plugged
- ⬜

PLSS Second Division
- ⬜

PLSS First Division
- ⬜

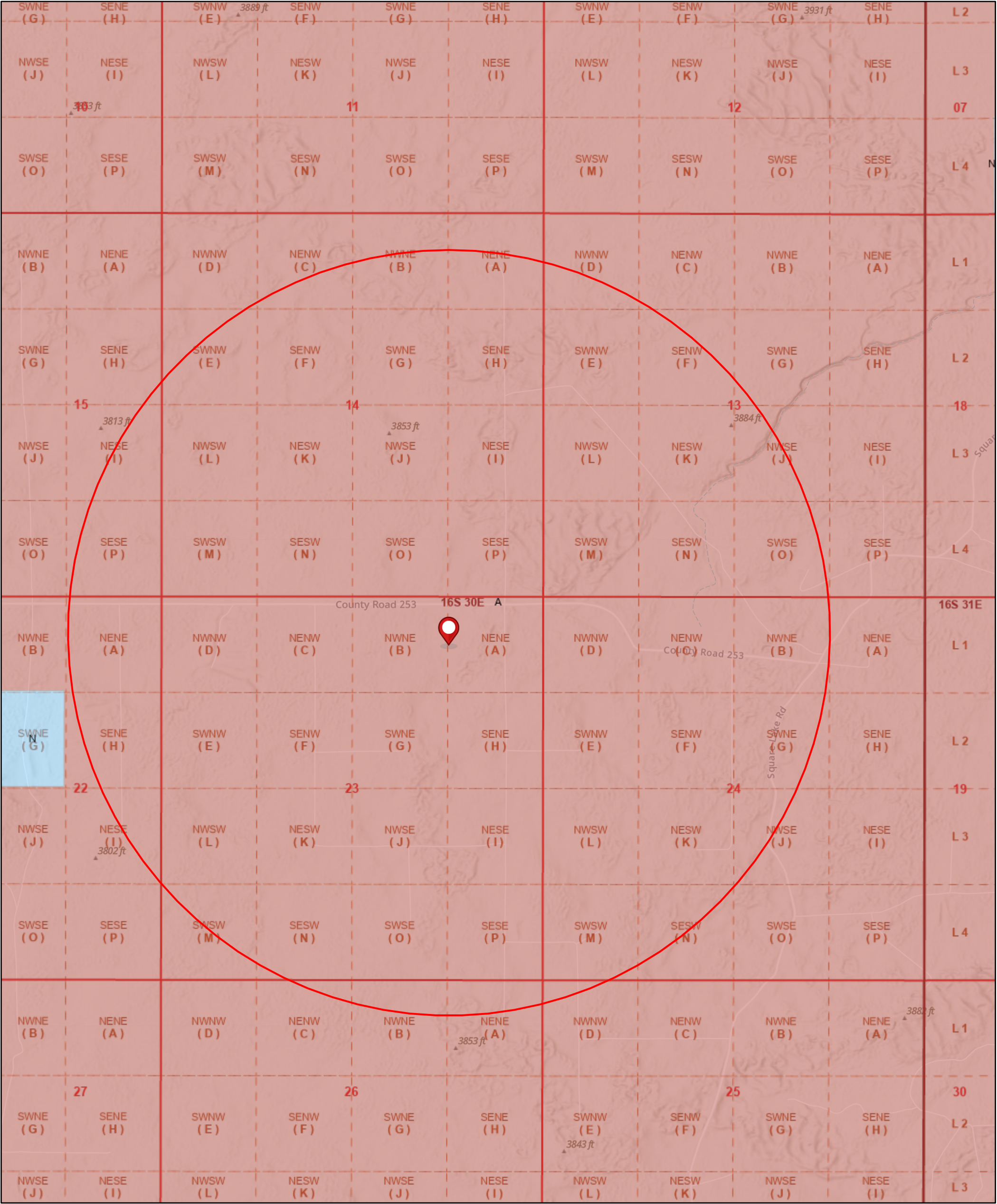
PLSS Townships

1:18,056



Esri, NASA, NGA, USGS, FEMA, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, OCD, BLM

1 Mile Mineral Ownership Map

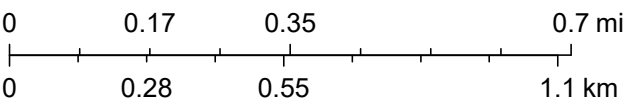


6/24/2025, 11:14:32 AM

Mineral Ownership

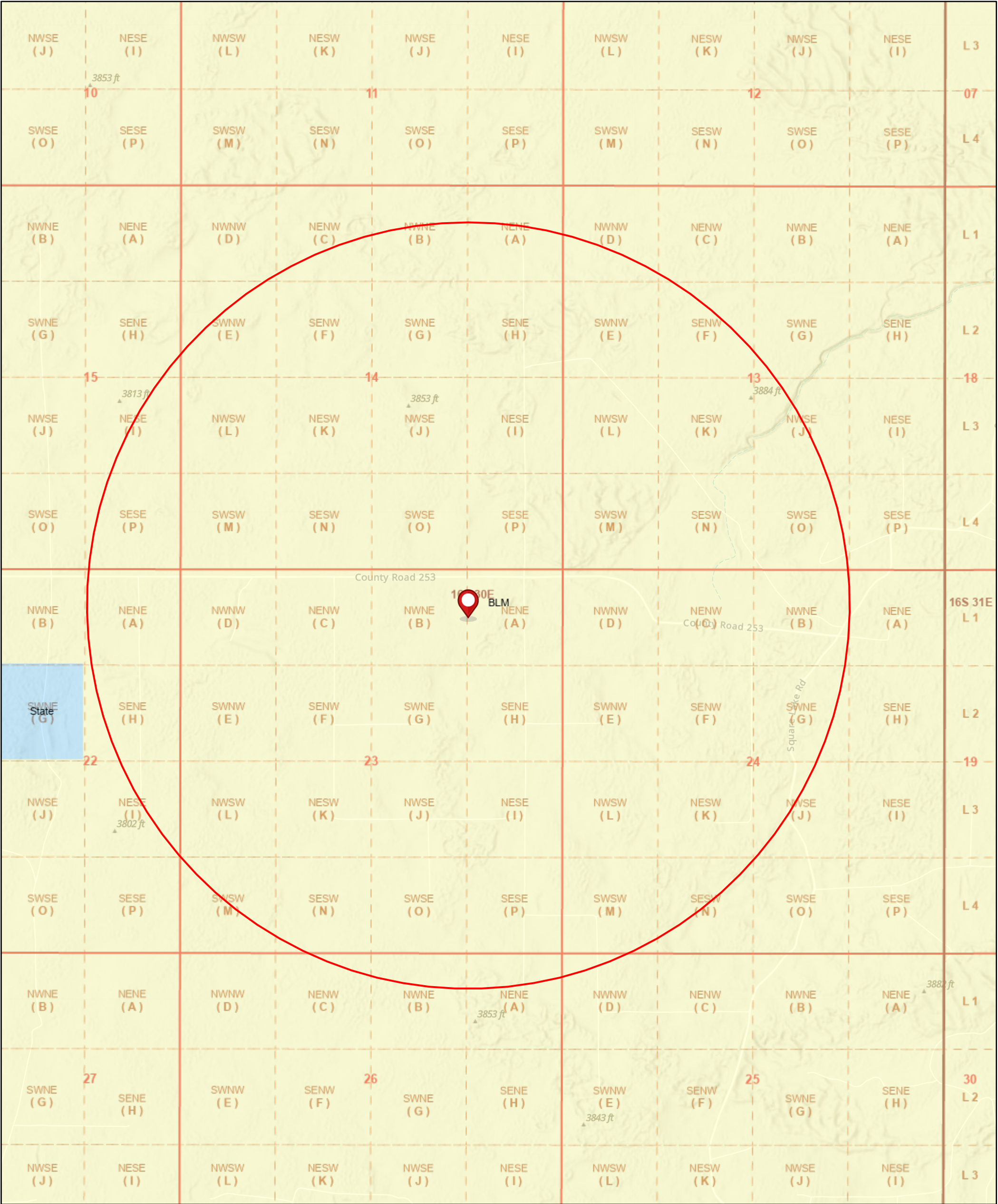
- A-All minerals are owned by U.S.
- N-No minerals are owned by the U.S.
- PLSS Second Division
- PLSS First Division
- PLSS Townships

1:18,056



U.S. BLM, Esri, NASA, NGA, USGS, FEMA, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, OCD, BLM

1 Mile Surface Ownership Map

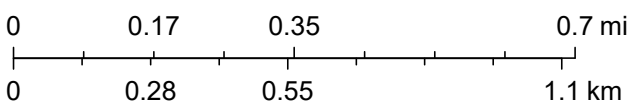


6/24/2025, 11:09:30 AM

Land Ownership

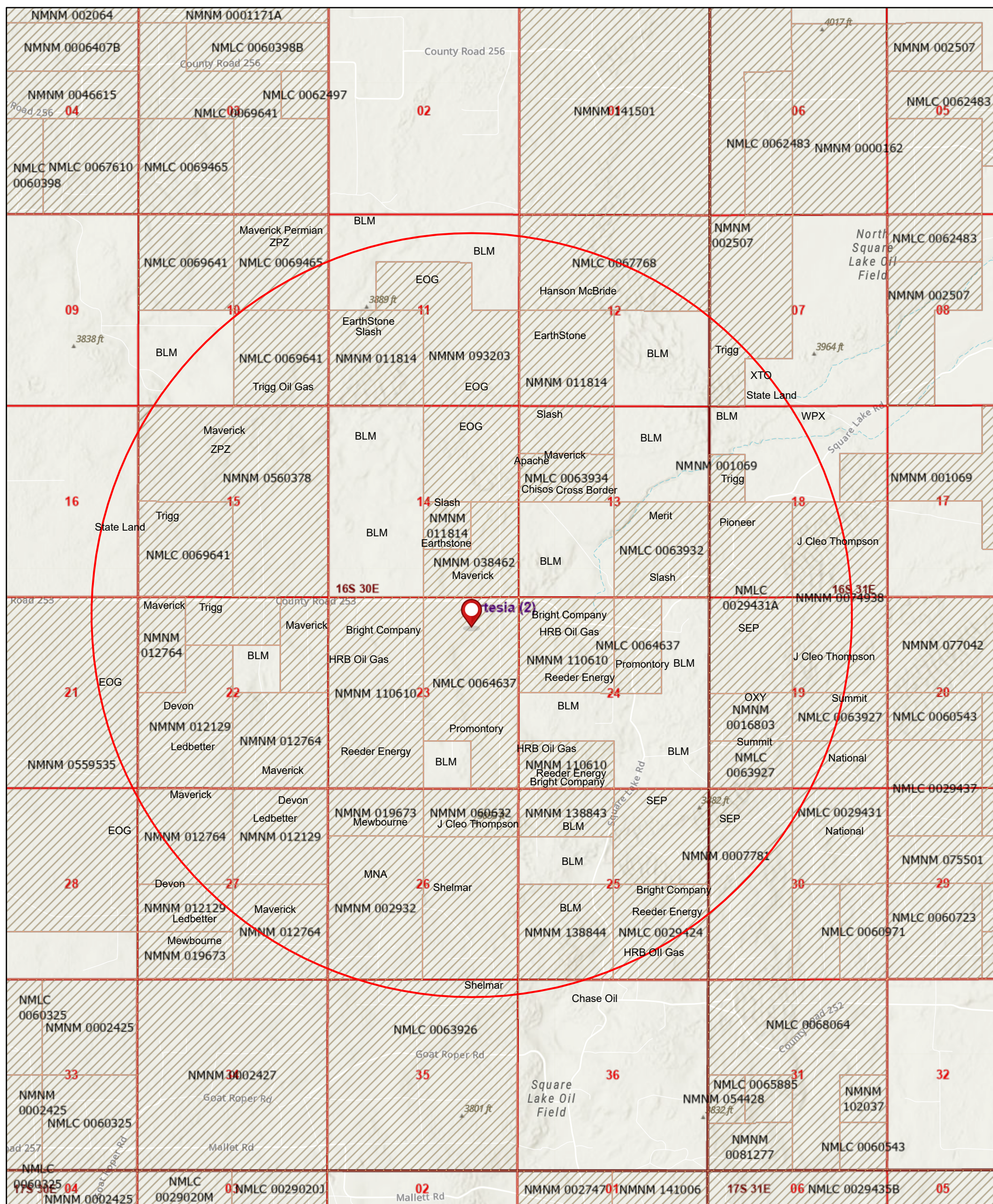
- BLM
- S
- PLSS Second Division
- PLSS First Division
- PLSS Townships

1:18,056



U.S. BLM, Esri, NASA, NGA, USGS, FEMA, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, OCD, BLM

2 Mile Lease Map



6/24/2025, 11:54:34 AM

 Authorized

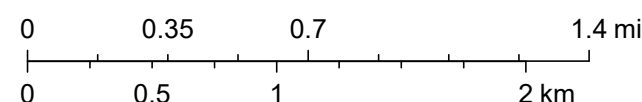


OCD Districts

 PLSS First Division

 PLSS Townships

1:36,112



U.S. Department of Interior, Bureau of Land Management (BLM), Esri, NASA, NGA, USGS, FEMA, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, OCD, BLM

1-Mile AOR Wells
C-108
Arrowhead SWD #1
Mack Energy Corporation
Proposed Disposal Well

	API	Well Name	Well Type	Well Status	ogrid	ogrid_name	County	PLSS Location (ULSTR)	SPUD Date	Lease Type	Measured Depth	Vertical Depth	Associated Pools	Plug Date
	30-015-03888	ETZ #001	Oil	Active	329493	OLEUM Energy LLC	Eddy	E-13-16S-30E	11/14/1940	Federal	2,353	2,353	[30620] HENSHAW, QUEEN-GRAYBURG-SA	12/30/9999
	30-015-03889	PRE-ONGARD WELL #004	Oil	Plugged (site released)	214263	PRE-ONGARD WELL OPERATOR	Eddy	M-13-16S-30E	12/31/1899	Federal	0	0	No Data	12/31/1899
	30-015-03891	ETZ FEDERAL #002	Oil	Plugged (site released)	11349	J M WELCH	Eddy	O-13-16S-30E	12/30/9999	Federal	99,999	99,999	[30620] HENSHAW, QUEEN-GRAYBURG-SA	7/10/1994
NO DATA	30-015-03912	PRE-ONGARD WELL #002	Oil	Plugged (site released)	214263	PRE-ONGARD WELL OPERATOR	Eddy	H-22-16S-30E	12/31/1899	No Data	0	0	No Data	12/31/1900
	30-015-03913	HENSHAW DEEP UNIT #005	Oil	Plugged (site released)	4323	CHEVRON U S A INC	Eddy	A-23-16S-30E	5/20/1962	Federal	12,100	12,100	[30630] HENSHAW, WOLFCAMP	1/28/2015
NO DATA	30-015-03915	PRE-ONGARD WELL #001	Oil	Plugged (site released)	214263	PRE-ONGARD WELL OPERATOR	Eddy	B-24-16S-30E	12/31/1899	No Data	0	0	No Data	12/31/1900
	30-015-03917	PRE-ONGARD WELL #001	Oil	Plugged (site released)	214263	PRE-ONGARD WELL OPERATOR	Eddy	C-24-16S-30E	12/31/1899	No Data	0	0	No Data	12/31/1899
	30-015-03919	HENSHAW DEEP UNIT #003Y	Oil	Plugged (site released)	14591	MERIT ENERGY COMPANY, LLC	Eddy	K-24-16S-30E	12/30/9999	Federal	99,999	99,999	[30630] HENSHAW, WOLFCAMP	3/6/1997
	30-015-10075	HENSHAW DEEP UNIT #009	Gas	Plugged (site released)	1903	BEACH EXPLORATION INC	Eddy	C-23-16S-30E	2/26/1998	Federal	10,690	10,690	[78340] HENSHAW, ATOKA (GAS); [96826] HENSHAW, MORROW	9/25/2013
	30-015-10088	HENSHAW DEEP UNIT #008	Oil	Plugged (site released)	14591	MERIT ENERGY COMPANY, LLC	Eddy	K-23-16S-30E	12/30/9999	Federal	99,999	99,999	[30630] HENSHAW, WOLFCAMP	2/16/1995
	30-015-10226	HENSHAW DEEP UNIT #006	Oil	Plugged (site released)	14591	MERIT ENERGY COMPANY, LLC	Eddy	I-23-16S-30E	12/30/9999	Federal	99,999	99,999	[30630] HENSHAW, WOLFCAMP	2/16/1995
	30-015-10367	PRE-ONGARD WELL #010	Oil	Plugged (site released)	214263	PRE-ONGARD WELL OPERATOR	Eddy	A-14-16S-30E	12/31/1899	Federal	0	0	No Data	12/31/1899
	30-015-10446	PRE-ONGARD WELL #012	Oil	Plugged (site released)	214263	PRE-ONGARD WELL OPERATOR	Eddy	G-23-16S-30E	12/31/1899	State	0	0	No Data	12/31/1899
	30-015-10499	HENSHAW DEEP UNIT #011	Oil	Plugged (site released)	14591	MERIT ENERGY COMPANY, LLC	Eddy	E-24-16S-30E	12/30/9999	Federal	99,999	99,999	[30630] HENSHAW, WOLFCAMP	3/10/1997
NO DATA	30-015-10572	HENSHAW DEEP UNIT #013	Oil	Plugged (site released)	14591	MERIT ENERGY COMPANY, LLC	Eddy	O-23-16S-30E	12/30/9999	Federal	99,999	99,999	[30630] HENSHAW, WOLFCAMP	2/16/1995
	30-015-10573	HENSHAW DEEP UNIT #014	Oil	Plugged (site released)	14591	MERIT ENERGY COMPANY, LLC	Eddy	M-24-16S-30E	12/30/9999	Federal	99,999	99,999	[30630] HENSHAW, WOLFCAMP	2/16/1995
	30-015-10625	PRE-ONGARD WELL #003	Oil	Plugged (site released)	214263	PRE-ONGARD WELL OPERATOR	Eddy	K-24-16S-30E	12/31/1899	No Data	0	0	No Data	12/31/1899
	30-015-22748	NORMAN FEDERAL #001	Gas	Plugged (site released)	21712	STRATA PRODUCTION CO	Eddy	K-14-16S-30E	12/30/9999	Federal	99,999	99,999	[30620] HENSHAW, QUEEN-GRAYBURG-SA	3/26/2003
	30-015-22977	O'NEILL FEDERAL #001	Gas	Plugged (site released)	13837	MACK ENERGY CORP	Eddy	I-15-16S-30E	12/30/9999	Federal	99,999	99,999	[30620] HENSHAW, QUEEN-GRAYBURG-SA	1/11/2006
	30-015-24792	KGS-A #001	Oil	Active	21355	SOUTHWEST ROYALTIES INC	Eddy	P-14-16S-30E	4/21/1984	Federal	0	99,999	[30630] HENSHAW, WOLFCAMP	12/30/9999
	30-015-25743	HENSHAW FEDERAL #001	Gas	Plugged (site released)	155615	NADEL AND GUSSMAN PERMIAN, LLC	Eddy	N-14-16S-30E	4/3/1987	Federal	11,775	11,775	[78340] HENSHAW, ATOKA (GAS)	3/5/2015
	30-015-32891	HENSHAW A FEDERAL #001	Oil	Active	1092	ARMSTRONG ENERGY CORP	Eddy	J-14-16S-30E	2/23/2004	Federal	12,830	12,830	[97376] HENSHAW, ORDOVICIAN	12/30/9999
NOT DRILLED	30-015-32892	HENSHAW B FEDERAL #001	Oil	Cancelled	147179	CHESAPEAKE OPERATING, INC.	Eddy	L-13-16S-30E	12/30/9999	Federal	0	0	No Data	12/30/9999
	30-015-34448	HENSHAW 23 FEDERAL #001	Gas	Plugged (site released)	1092	ARMSTRONG ENERGY CORP	Eddy	B-23-16S-30E	10/5/2006	Federal	12,800	12,800	[30630] HENSHAW, WOLFCAMP; [96542] WILDCAT, GRANITE	7/14/2022
	30-015-34618	HENSHAW 15 FED #001	Gas	New	162683	CIMAREX ENERGY CO. OF COLORADO	Eddy	P-15-16S-30E	12/30/9999	Federal	0	0	[96826] HENSHAW, MORROW	12/30/9999
	30-015-34755	GLOBE 14 FEDERAL #001	Oil	Plugged (site released)	147179	CHESAPEAKE OPERATING, INC.	Eddy	14-16S-30E	11/24/2006	Federal	9,100	9,100	[30630] HENSHAW, WOLFCAMP	7/18/2012
NOT DRILLED	30-015-34759	BOGLE 23 FED COM #001	Gas	Cancelled	147179	CHESAPEAKE OPERATING, INC.	Eddy	23-16S-30E	12/30/9999	Federal	0	0	[97376] HENSHAW, ORDOVICIAN	12/30/9999
	30-015-35074	HENSHAW 15 FEDERAL #001Y	Gas	Plugged (site released)	162683	CIMAREX ENERGY CO. OF COLORADO	Eddy	O-15-16S-30E	12/30/9999	Federal	10,935	10,935	[78340] HENSHAW, ATOKA (GAS); [96826] HENSHAW, MORROW	4/26/2013

30-015-03888		ETZ #1	
		Operator: Oleum Energy LLC Location: Sec. 13 T16S R30E 2310 FNL 330 FWL Objective: Henshaw; Queen-Grayburg-SA GL Elevation:	
Depth	Hole Size & Cement	Casing Detail	
	17 1/2" Hole		10 3/4 46# 464'
464'	50sx Cmt to Surface		
	12 1/4" Hole		8 5/8" 24# 1350'
1350'	1100sx Circ to Surface		
	7 7/8" Hole		6" 10.5# 3200'
3200'	Circ to Surface		
			Perfs 3130-3160'
		XXXXX	XXXX
		TD- 3200'	

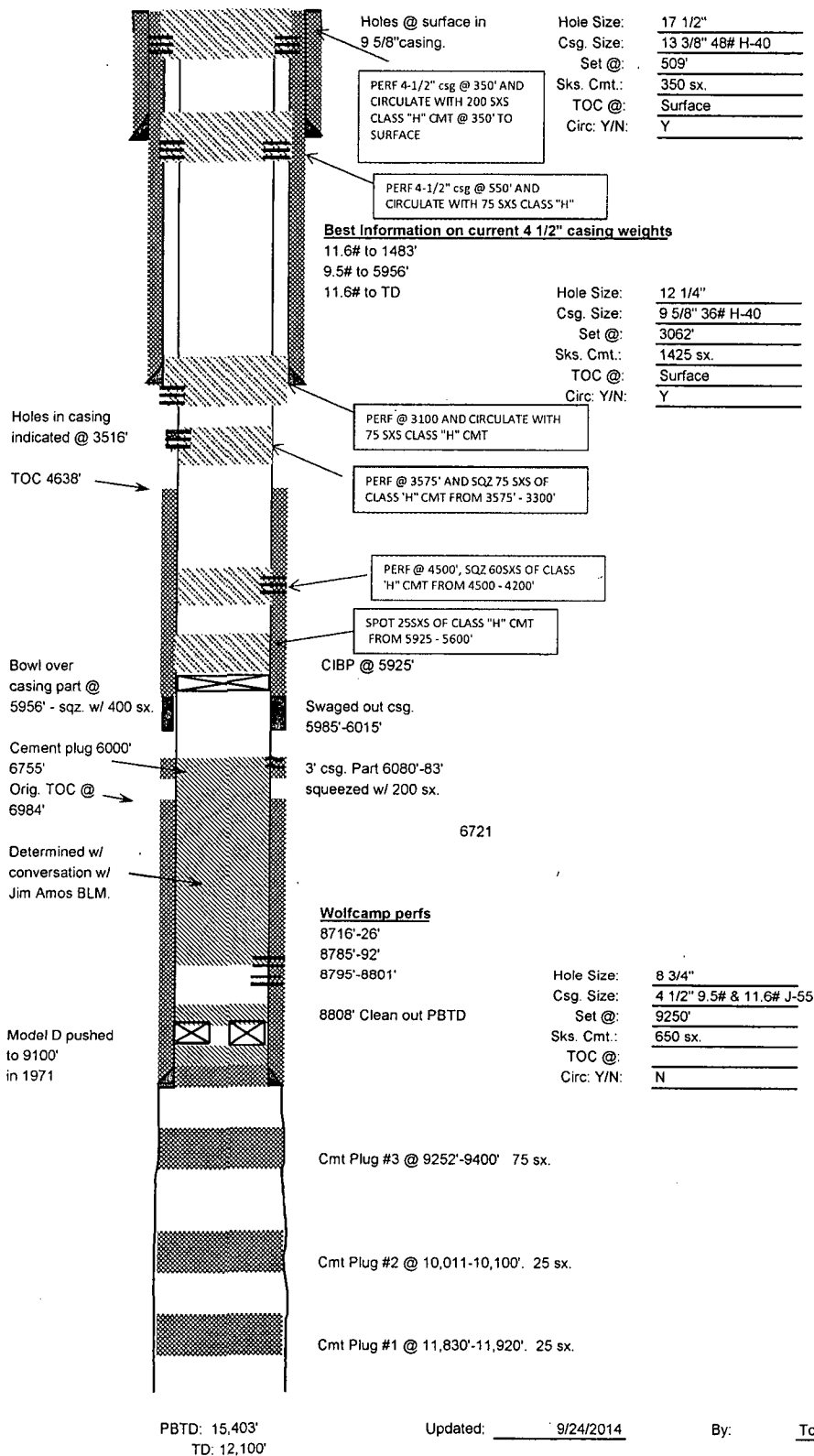
P&A 12/15/1966		Pre-Ongard Well #4					
30-015-03889		Operator: Pre-Ongard Well Operator Location: Sec. 13 T16S R30E 660 FSL 660 FWL Objective: GL Elevation: 3869'					
Depth	Hole Size & Cement					Casing Detail	
	15" Hole						
	175sx Cmt to Surface						10 3/4" 32# 518'
518'							
	11" Hole						7 5/8" 24# 3018'
	350sx Circ to Surface						
3018'							4 1/2" 9.5# 9115'
	6 3/4" Hole						
	350sx Circ to Surface						
9115'							
							Perfs 8953-8966' 8743-8792' 8413-8419' 7830-7875'
							Plugs CIBP @ 8930' w/ 1sx cmt top CIBP @ 8580' w/ 1sx cmt tpp CIBP @ 7943' w/ 10' cmt 25sx cmt plug @ 7700-7860' 25sx cmt plug @ 6755', 4500-4600, 50sx cmt plug @ 3280', 3030' 10sx cmt plug Surface
		XXXX	~~~~	~	~~~~	XXXX	
		XXXXX	~~~~	~~~~	~~~~	XXXX	
		XXXXX	~~~~	~~~~	~~~~	XXXX	
		XXXXX	~~~~	~~~~	~~~~	XXXX	
TD- 9600'							

P&A 7/11/1994		Etz Federal #2			
30-015-03891		Operator: JM Welch Location: Sec. 13 T16S R30E 330 FSL 1650 FEL Objective: GL Elevation:			
Depth	Hole Size & Cement	Casing Detail			
525'		8 5/8" 48# 30'			
3760'		5 1/2" 15# 3,760'			
		Plugs BP 3100' w/ 35' cmt cap BP 2575' w/ 35' cmt cap 100' cmt plug @ 1500' 100' cmt plug @ surface			
		Perfs 3725-3750' 3165-3175'			
		XXXXX		XXXXX	
		TD- 3,761'			

Lease Name: Henshaw Deep Unit
Well No. 5
Location: 660' FNL & 660' FEL
Sec.: 23
Twn 16S
Range 30E
Cost Center

Field: Henshaw
Reservoir: Wolfcamp
GL: 3834'
KB: 3850'
DF:
Status:

API No.: 30-015-03913
REFNO: FC4590
Spud Date: 5/21/1962
Comp. Date:
County: Eddy
State: New Mexico
Type Lease: Federal

PROPOSED P&A

(Formerly HQ 1)

13 3/8 48#
Q 500', 450 SX CT350' CMT plug surface to 50'
91b mud 50' to 450'

100' CMT plug 450' to 550'

91b mud 550' to 2843

TOC 2843

CIOP at 2893'

Greensburg
2943-45, 6566, 2001-2, 7-15Louisiana
3074-98, 3110-3124

} considered one zone

10' CMT
CIOP at 3250'9 5/8 40#
Q 34985 1/2 cut and pulled at 3680
CMT Plug TOC at 3585

CMT Ret. at 4246' SQZ w/ 100 SX

Fish Hole Tubing, success shot & Jars

8822-30, SQZ'd
8850-581 SX cement TOC 8845
CIOP at 8950'

Penn 9553-60, 64-70, 70-72

2 SX cement
Baker Model G PKR at 11569'

Devonian 11680-96

TOC 11773

5 1/2 15.5/17#
AT 11860' 550 SX
TOC at 12496 CBL

TOC 11872'

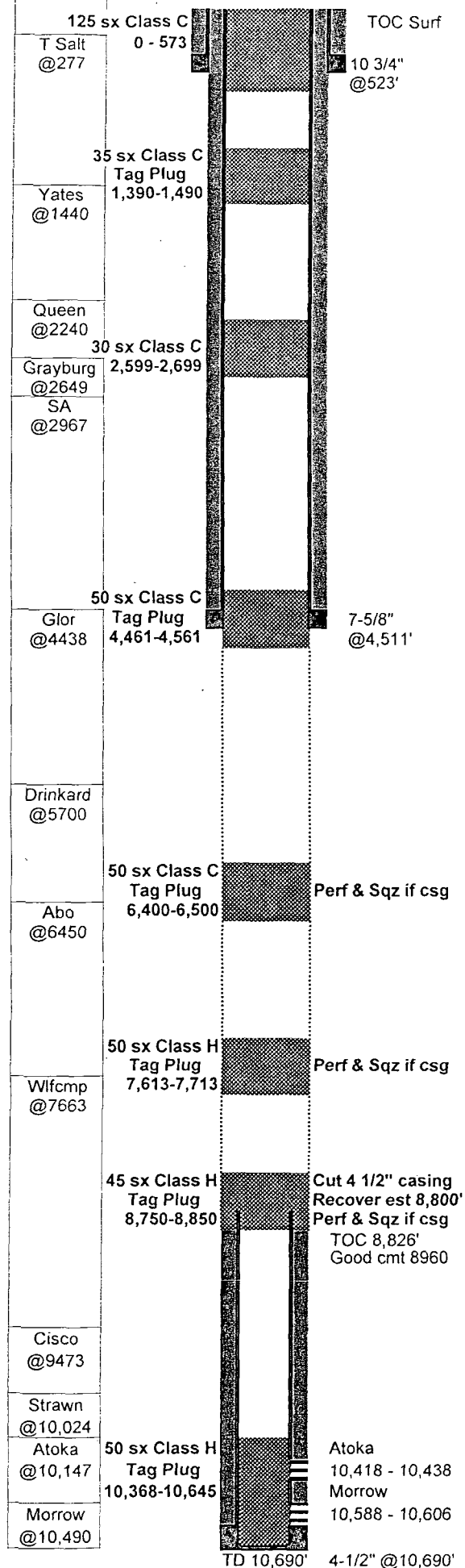
75 SX Howco

OHCIOP at 12020'

Bit at 13,010

TD = 13,072

P&A 4/5/1995		Henshaw Deep Unit #3Y	
30-015-03919		Operator: Merit Energy Company LLC Location: Sec. 24 T16S R30E 1925 FSL 1980 FWL Objective: Henshaw; Wolfcamp GL Elevation: 3853'	
Depth	Hole Size & Cement	Casing Detail	
	15" Hole		
525	450sx Cmt to Surface	13 3/8" 48# 525'	
	11" Hole		
3309'	1100sx Circ to Surface	9 5/8" 32# 3099'	
	7 7/8"		
	475sx Circ to Surface	4 1/2" 11.6# 9.5# 9527'	
9733'		Perfs 8711-8740' 8743-8827'	
		Plugs Cmt Retainer @ 4850' 40sx cmt below 10sx above Tag cmt @ 3695' Displace mud 3695-515' 50' Surface Plug	
		TD- 10,000'	



Henshaw Deep Unit #9 (Proposed P&A)

GL: 3,824
KB: 3,838
TD: 10,690
PBD: 10,645
Fr. Wtr: Legal: 660 from N, 1,980 from W
Section: 23-C
Township: 16S
Range: 30E
County: Eddy, NM

Status: Active Flowing
Perfs: 10,588' - 10,606' Morrow, 10,418' - 10,438' Atoka
API: 30-015-10075
NM Lse: LC-029424
Field: Henshaw (Morrow) Gas Oil Pool, Henshaw (Atoka) Gas Pool
Logs: Orig - GR, Neu, DIL & ML, Reentry - GR, Neu, Den, DIL, CBL
Archeological: Cleared

Casing	Wt	Type	Set	Cmt	Hole	TOC	Method	
10-3/4"	32.75		523	275	15"	Surf	Circ	1963
7-5/8"	26.40	J-55	4,511	1,100	9 5/8"	Surf	Circ 25 sx	1963
4-1/2"	11.6 & 13.5	J55 & N80	10,690	260	6 3/4"	8,826	CBL	1998

- 16-Sep-63 **D&A Shell Oil Co. Henshaw Deep Unit #9**
TD 9474 Plugs - Surf 15sx, 4450-4550 25sx, 6400-6500 25sx, 7600-7800 50sx, 8500-8600 25sx, 8800-8150 75sx
- 26-Feb-98 **Reenter - Beach Exploration, Henshaw Deep Unit #9**
Drilled out all plugs and new formation w/6 3/4" bit to 10690
DST #1 Atoka 10,419 - 10,584 GTS 2min into 1st BU, Recover 603' GC mud
DST #2 Morrow 10,575-10,690 GTS 75min into FF, Recover 300' SLGC mud
FSI 4322 psi acted tight
Morrow Completion
Perf Morrow 10,588 - 10,606, 6 JSPF, acidize w/3000gal 7.5% & 40 RCNBS
AIR 2.65 BPM AIP 6250psi ISIP 5200psi well prod 15 BO 150 MCF SITP 2300psi
- 9-Jun-98 Frac w/50Mgal CO2 foam w/5M# Econoprop+15M# Carbolite AIR 8 BPM
9500 psi ISIP 6800 psi well producing 4 BO 138 MCF
Official Pot - Flowing on Plunger lift 5 BO 150 MCF
- 7-Jul-98 Changed tbg hanger and checked TD at 10,598 (14' - 18' covered did not CO)
Installed plunger lift
Atoka Completion
Perf Atoka 10,418-20, 10,432-38 w/3 3/8" csg gun 4 SPF (8 + 24 holes)
acidized w/2800 gal 15% NEFE 1.3 BPM 6140 psi ISIP 6380 psi
Official Pot - Flowing on Plunger lift 1 BO 77 MCF (combined Morrow & Atoka?)
- 19-Jul-99 BLM approval to downhole commingle Morrow & Atoka
- 29-Nov-07 Plunger lift equip has been on well 5+ yrs?? Prod down to nothing - best rate since 2000 about 35 MCFPD. RU swab unit didn't feel any fluid tagged bottom pulled 3 BO on 1st run then after flow brought up plunger in pieces. Csg press had been 240 psi on backside nothing on tbg. Backside is not sales but control gas - probably broke loose plugged plunger in tbg and backside press brought plunger up - rec 5.5BO 1.5BW all day - dropped new plunger set for long flow short SI - flowing 35 MCFPD
- 29-Sep-10 Swabbed well. TOF 10,100. Second run FL at SN recovered 1 bbl.

CASING DETAIL

# OF JTS	DESCRIPTION	LENGTH	FROM	TO
	Distance from KB to top of pipe	14.00	0.00	14.00
8	4 1/2" 13.5# N80	333.65	14.00	347.65
62	4 1/2" 11.6# N80	2601.15	347.65	2948.80
125	4 1/2" 11.6# J55	5285.64	2948.80	8234.44
50	4 1/2" 11.6# N80	2430.68	8234.44	10665.12
1	4 1/2" 11.6# N80	45.07	10665.12	10710.19
	260sx Super H w/0.4%CFR-5, 5% Halad 344, 5#/sx gilsonite, 1#/sx salt (yld 1.67)			

TUBING STRING 5/19/99

# OF JTS	DESCRIPTION	LENGTH	FROM	TO
	Distance from KB to top of pipe	14.00	0.00	14.00
320	2 3/8" 4.7# N80 tbg	10,384.0	14.00	10398.00
1	SN 1 25/32	1.10	10398.00	10399.10
1	Perf sub	4.00	10399.10	10403.10
1	BP Mud joint	32.45	10403.10	10435.55

P&A 2/17/1995		Henshaw Deep Unit #8	
30-015-10088		Operator: Merit Energy Company, LLC Location: Sec. 23 T16S R30E 1980 FSL 1980 FWL Objective: Henshaw; Wolfcamp GL Elevation: 3823'	
Depth	Hole Size & Cement	Casing Detail	
	15" Hole		
522'	250sx Cmt to Surface	10 3/4" 32# 522'	
	11" Hole		
3030'	350sx Circ to Surface	7 5/8" 24# 3030'	
	6 3/4" Hole		
9025'	350sx Circ to Surface	4 1/2" 9.5# 9025'	
		Perfs 8733-8743'	
		Plugs CIBP @ 8764' w/ 30sx cmt top CIBP @ 8650' w/ 10sx cmt top 25sx cmt 2989-3089' 30sx cmt 1392-1500' 45sx cmt 472-572' 10sx cmt 30' to Surface	
		XXXXX XXXXX	
TD- 9036'			

P&A 6/2/1995		Henshaw Deep Unit #6	
30-015-10226		Operator: Merit Energy Company LLC Location: Sec. 23 T16S R30E 1980 FSL 660 FEL Objective: GL Elevation: 3833'	
Depth	Hole Size & Cement	Casing Detail	
	15" Hole		10 3/4"
507'	250sx Cmt to Surface		40.5# 507'
	11" Hole		7 5/8"
3547'	350sx Circ to Surface		24# 3547'
	6 3/4" Hole		4 1/2"
9351'	400sx Circ to Surface		9.5# 9351'
			Perfs 8782-8787'
			Plugs CICR @ 5015' 275sx cmt into 5015' 80sx cmt plug @ 3100' 35sx cmt plug @ 560' 5sx cmt plug @ 30-Surface
		XXXXX	XXXXX
		TD- 9500'	

[illegible]

P&A 12/22/1966		Pre-Ongard Well #12	
30-015-10446		Operator: Pre-Ongard Well Operator Location: Sec. 23 T16S R30E 1980 FNL 1830 FEL Objective: GL Elevation: 3848'	
Depth	Hole Size & Cement	Casing Detail	
500'	16" Hole 500sx Cmt to Surface	11 3/4" 42# 500'	
3050'	11" Hole 3000sx Circ to Surface	8 5/8" 24# 3050'	
8911'	7 7/8" Hole 1905sx Circ to Surface	5 1/2" 15.5 & 17# 8911'	
		Perfs 8732-8760'	
		Plugs 50sx cmt plug 8732-8760' 10sx cmt plug to Surface	
		XXXXX	XXXXX
		TD- 8916"	

P&A 3/11/1997		Henshaw Deep Unit #11	
30-015-10499		Operator: Merit Energy Company LLC Location: Sec. 24 T16S R30E 1980 FNL 660 FWL Objective: GL Elevation: 3832'	
Depth	Hole Size & Cement	Casing Detail	
	15" Hole		
524'	575sx Cmt to Surface	11 3/4" 42# 524'	
	11" Hole		
3032'	1000sx Circ to Surface	8 5/8" 32# 3021'	
	6 3/4" Hole		
9012'	350sx Circ to Surface	4 1/2" 10.5, 11.6# 9012'	
		Perfs 8788-8797' 8804-8815'	
		Plugs CIBP @ 8235' w/ 30' Perfs 3080-905' & 555' Sqz 40sx 40sx @ 2643' 40sx @ 702' 335sx @ 555-0'	
		XXXXX ~~~~~~ XXXX TD- 9014'	

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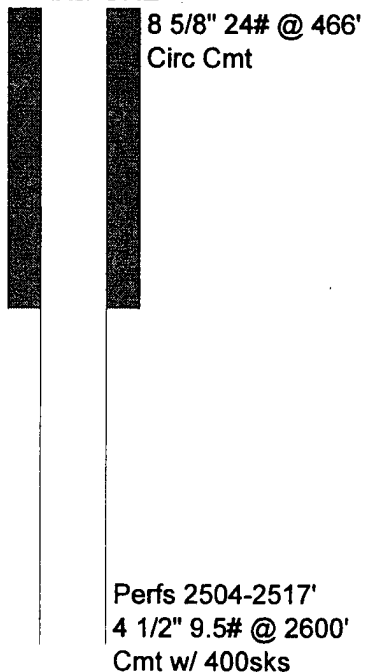
P&A 9/4/1961		Pre-Ongard Well #3		
30-015-10625		Operator: Pre-Ongard Well Operator Location: Sec. 24 T16S R30E 660 FNL 1980 FWL Objective: Henshaw; Wolfcamp GL Elevation: 3850'		
Depth	Hole Size & Cement			Casing Detail
	17 1/2" Hole			13 3/8" 48# 372'
372'				
		TD- 372'		

P&A 3/27/2003		Norman Federal #1	
30-015-22748		Operator: Strata Production Co Location: Sec. 14 T16S R30E 1980 FSL 1980 FWL Objective: Henshaw; Queen-Grayburg-SA GL Elevation: 3829'	
Depth	Hole Size & Cement	Casing Detail	
	11" Hole		
443'	300sx Cmt to Surface	8 5/8" 23# 443'	
	7 7/8" Hole		
3824'	400sx Circ to Surface	4 1/2" 9.5# 3824'	
		Perfs 2504-2516'	
		Plugs CIBP @ 2200' w/ 35' 25sx cmt @ 1007' 25sx cmt @ 700-976' 35sx cmt @ 501' 15sx cmt @ 30' to Surface	
		XXXX XXXXX XXXX	
		TD- 3834'	

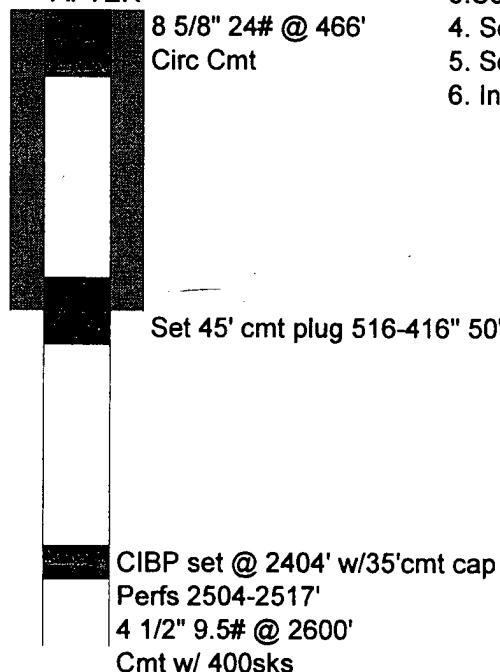
30-015-22977
P&A 1/12/2006

MACK ENERGY CORPORTION
O'NEIL FEDERAL #1
Sec 15 T16S R30E 1980FSL 660FEL

BEFORE



AFTER



1. Notify BLM 24 hrs. prior to any work done.
2. Circ hole with mud gel.
3. Set CIBP @ 2404' w/35'cmt cap
4. Set 100' cmt plug 45sks 516-416' 50' below and above shoe joint
5. Set 60' cmt plug at surface
6. Install Dry Hole Marker

10/21/2005

Fed #1.wk4

30-015-25743
P&A 3/06/2015

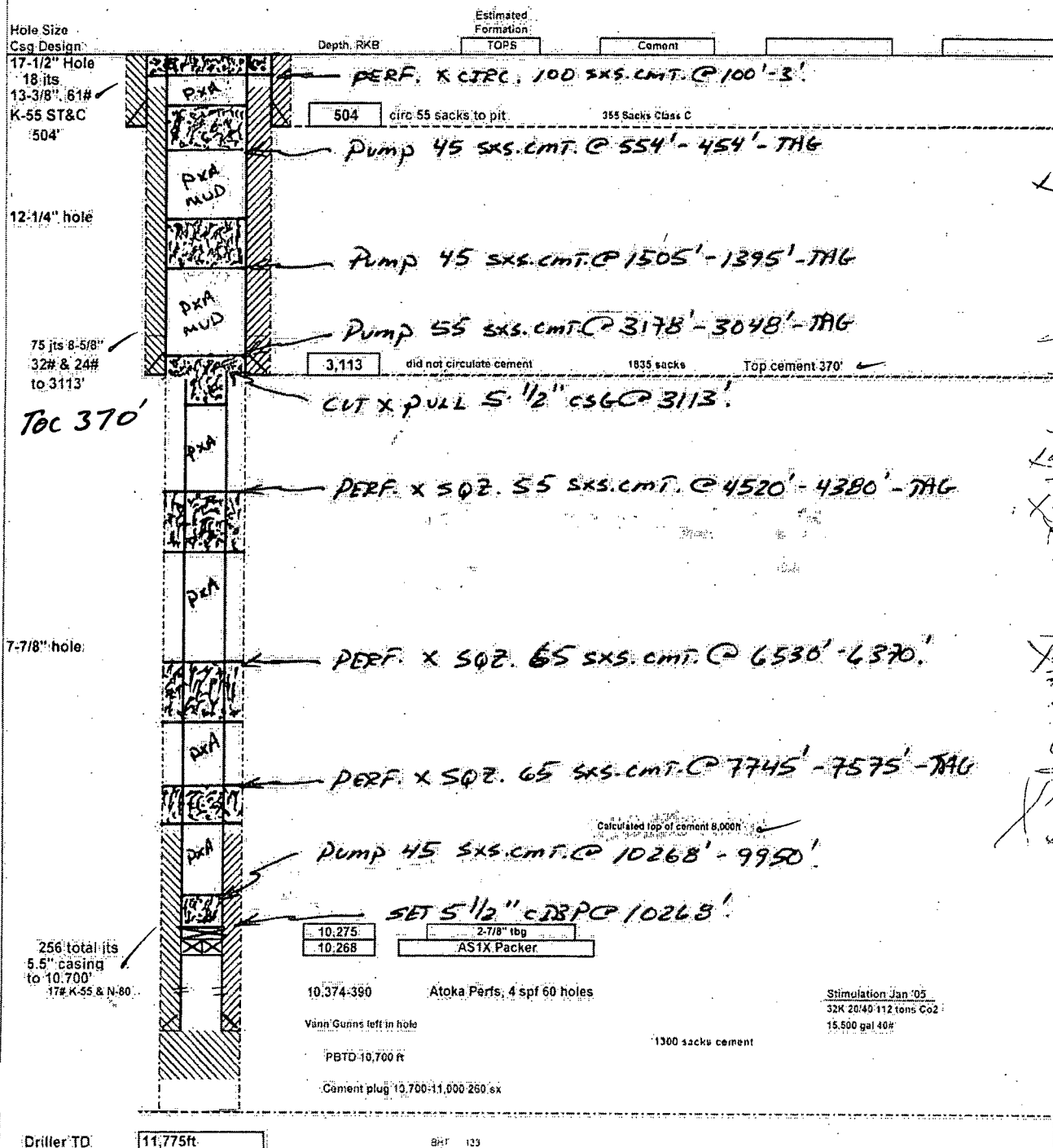
Nadel & Gussman Permian, LLC

LEASE: Henshaw Federal
FIELD: Henshaw Atoka
LOCATION: 330' FSL 1750' FWL
SPUD DATE: 6/12/1987
CONTRACTOR:

WELL NO.: 11
COUNTY: Eddy
LEGAL: Sec. 14-16S-30E
DRAWN BY: Jason Goss
DATE: 7/10/2014

API #: 30-015-257434
STATE: New Mexico
GL: 3821
DF: 3821
KB:

Henshaw Federal Well No. 11



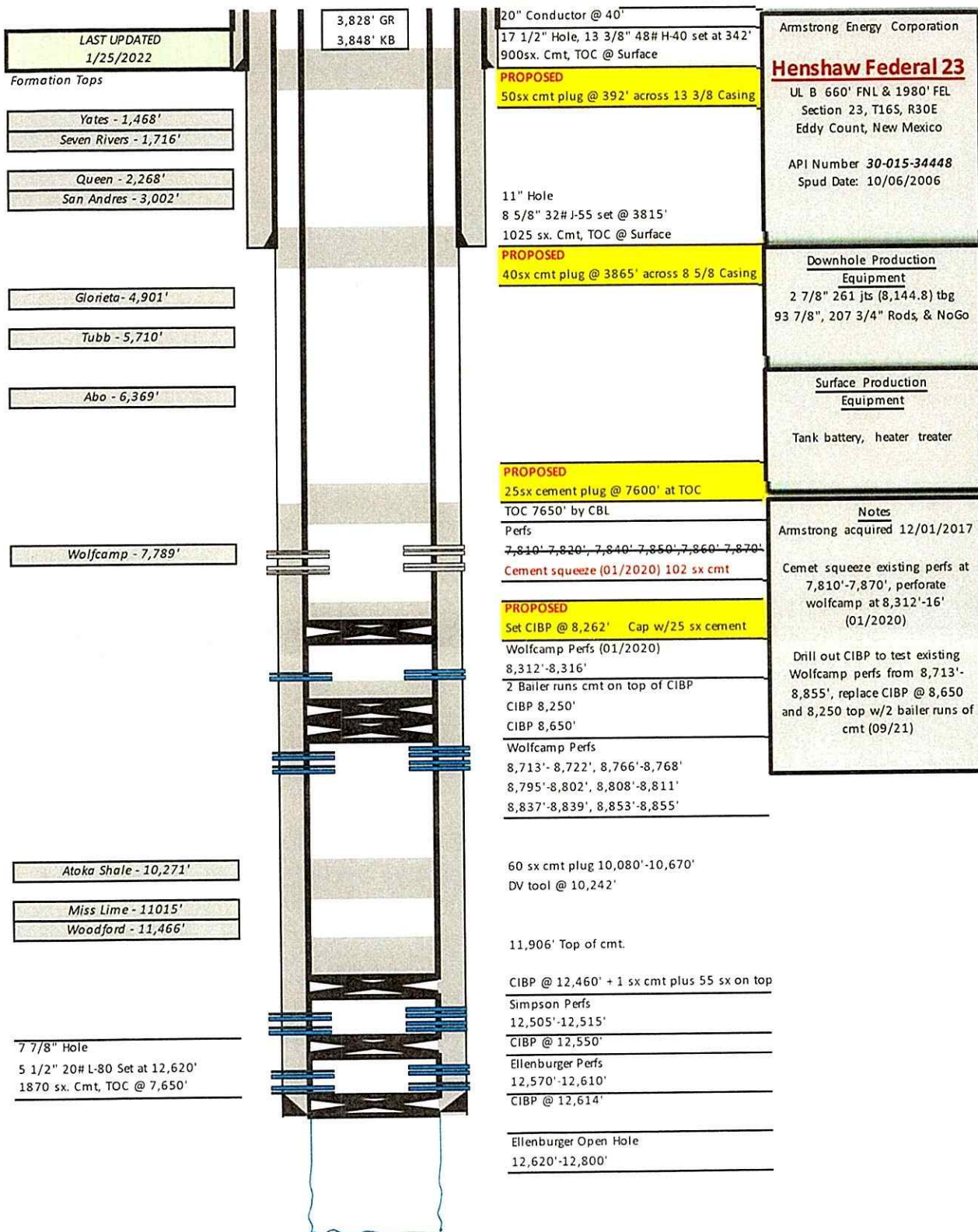
Driller TD: 11,775ft

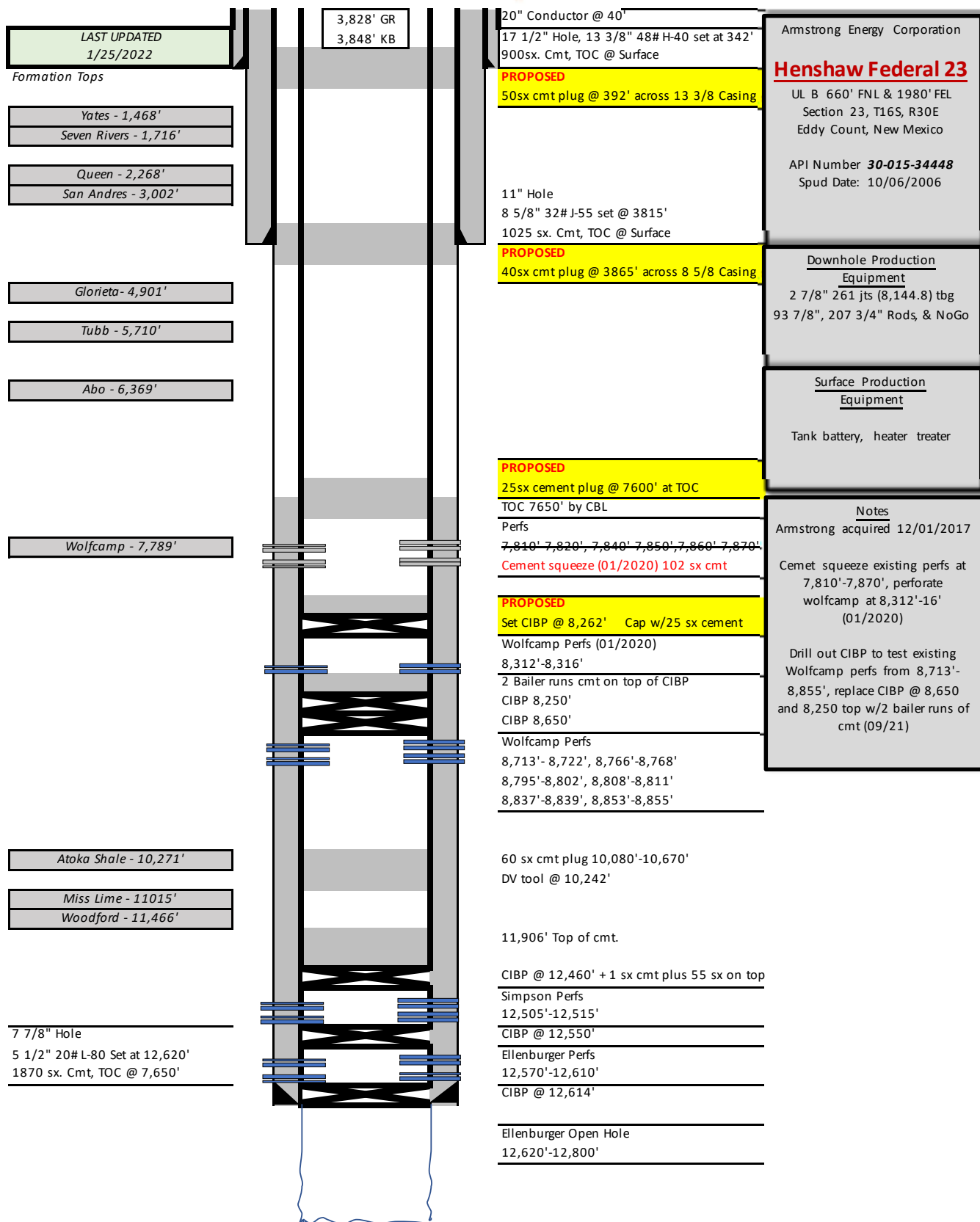
BHT 133

DAE 08/25/14

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30-015-34448
P&A 10/2/2024



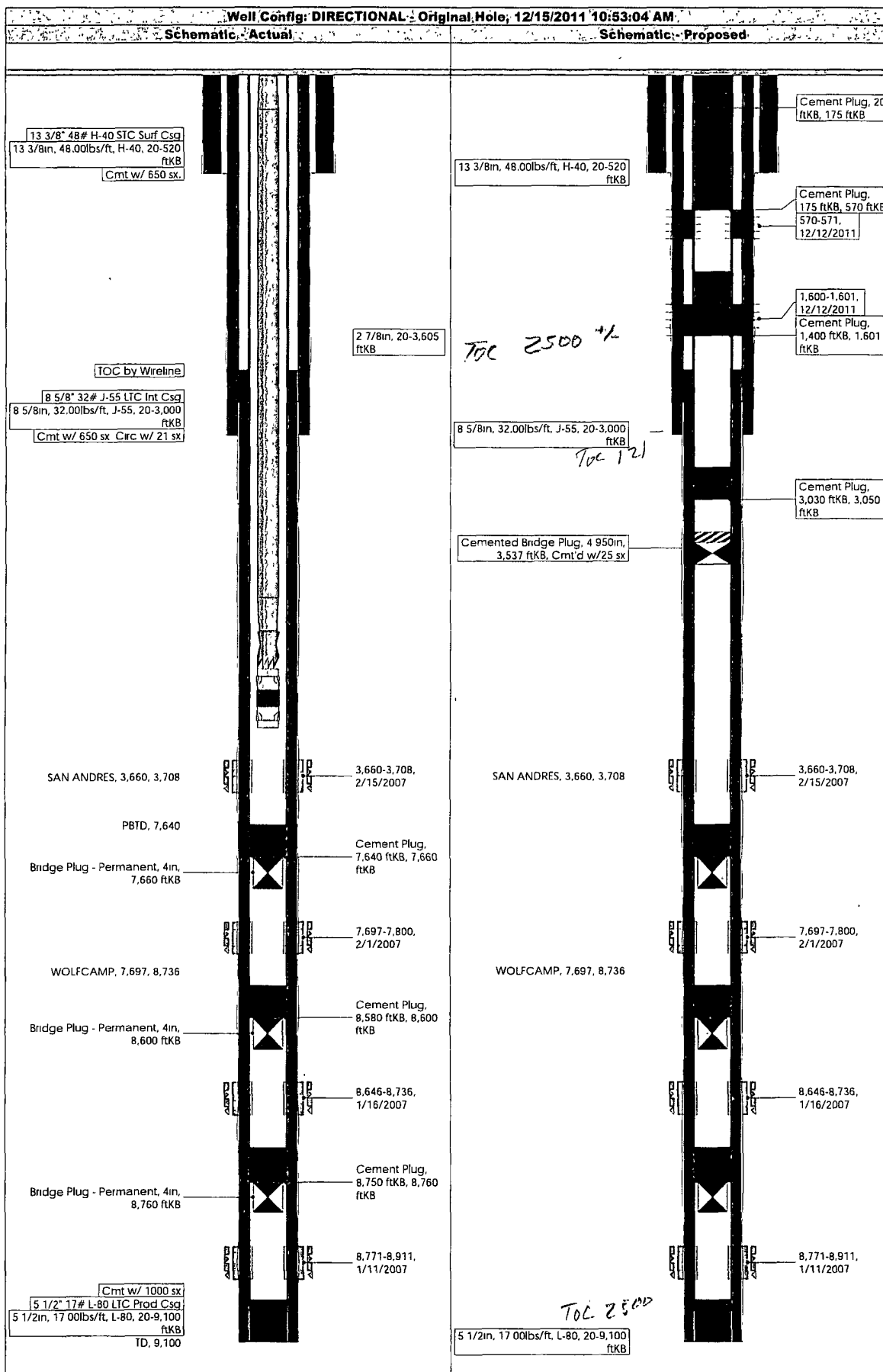


P&A 7/25/2006		Henshaw 15 Fed #1		
30-015-34618		Operator: Cimarex Energy Co. Of Colorado Location: Sec. 15 T16S R30E 1160 FSL 660 FEL Objective: Henshaw; Morrow GL Elevation: 3800'		
Depth	Hole Size & Cement			Casing Detail
	17 1/2" Hole			
510'				13 3/8" 48# 510'
				Cellar began to cave in 150sx into cellar 350sx into cellar 350sx cmt Pulled csg out of hole Skid Well
		TD- 510"		



Proposal Schematic

GLOBE 14 FEDERAL 1



30-015-35074
P&A 4/27/2013

Cimarex Energy Company

12/1/2011 DWT

Lease: Henshaw 15 Fed #1 Y		Perforations			Casing			
Field:	Henshaw	Reservoirs	From	To	Size	Weight	Grade	Depth
KB:	21:00	Atoka B	10,364	10,390	13 3/8	48	H40	508
Legals:	Sec. 15-T16S-R30E				9 5/8	40	J55	3,123
	1,160' ESL 660' FEL				5 1/2	17	P110	12,164
	Eddy Co., New Mexico							
Directions to Location:					Tubing			
					Size	Weight	Grade	Depth
					2 3/8	4.7	L80	10,352

Drawing Not To Scale

Patterson Rig #46 spud 7/21/06
Well TD'd @ 10,935' 8/26/06
Rig released 8/29/06
Completion Started 9/6/06
Turned to Production

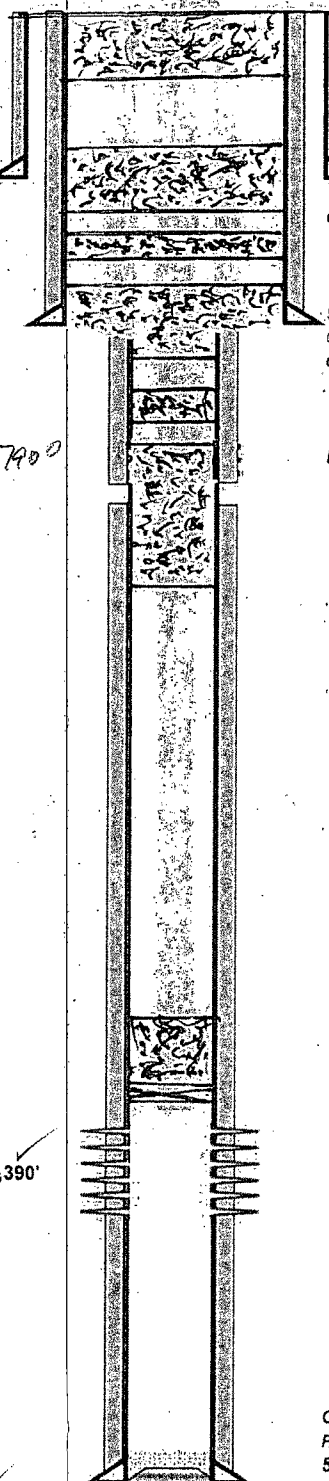
5-1/2" csg landed with 170k slip weight

Tree Information	
Valve Type	CIW-ODES
Valve Size	2 1/16
Swab Valve	2 1/16
PSI Rated	5,000
Top Connection	
B Section Size	7-1/16" 5m

5-1/2" TOC @ 8758' 7400
CBL 9/9/06

Atoka B 10,364' - 10,390'

8 3/4" hole TD @ 10,935'



13-3/8" 48# H40 STC set @ 508'

Cement to surface

9-5/8" 40# J55 LT&C set @ 3,123'

Cmt'd w/ 775sx Lead + 200sx Premium
Cement to surface

DV Stage Collar @ 8,008'

COTD = 10800' MD (10/14/2011)

PBTD = 10,814' MD

5-1/2" 17# P110 LTC set @ 10,920'

Yt 1148
Qx 1933
SA 2930
Abo 6425
WC 7760
ST 9950
AT 10230
MR 10420
MISS 10653

Attachment 3



Catalyst Oilfield Services
11999 E Hwy 158
Gardendale, TX 79758
(432) 563-0727
Fax: (432) 224-1038

Water Analysis Report

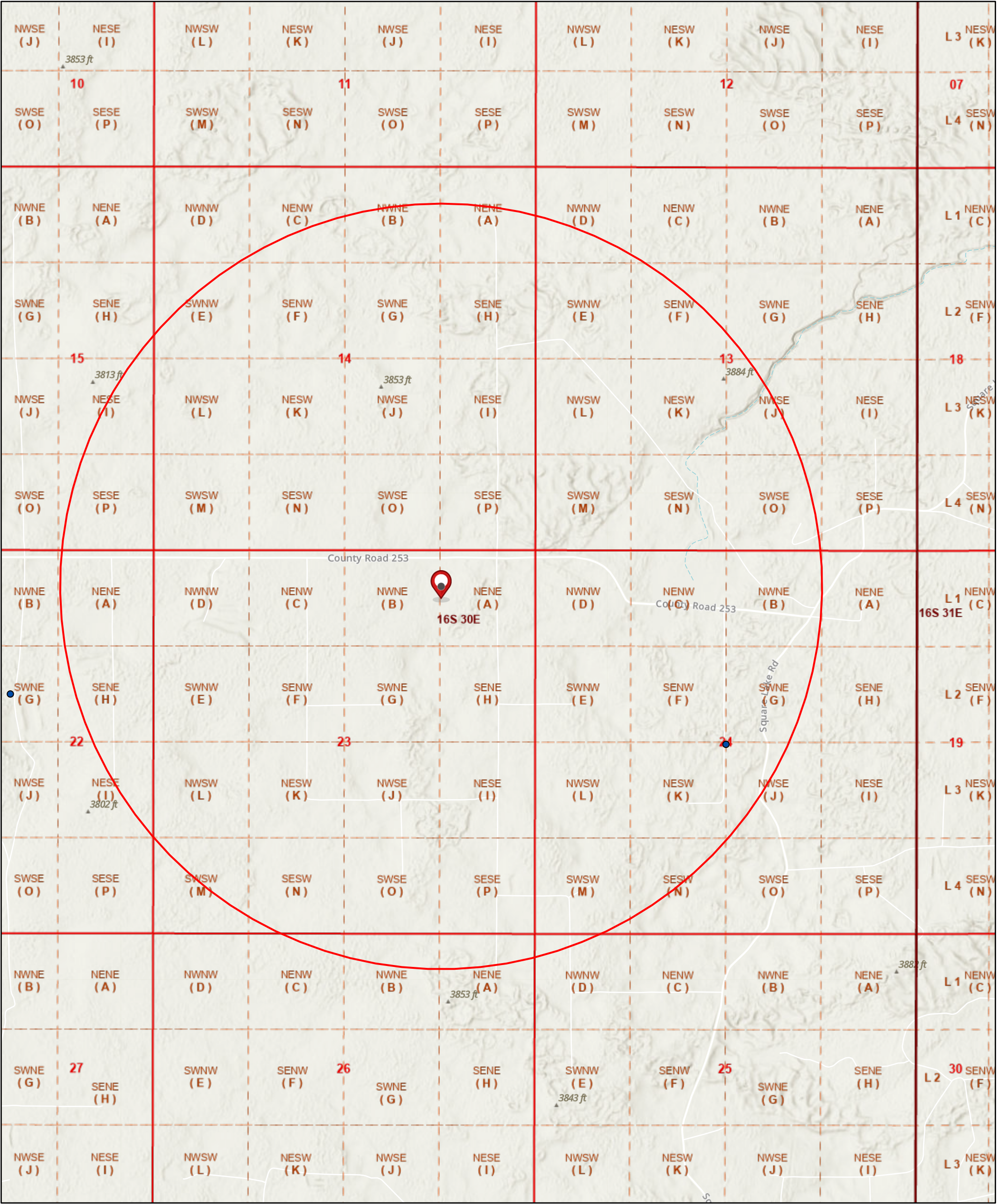
Customer:	Mack Energy Corporation	Sample #:	344269
Area:	Artesia	Analysis ID #:	248301
Lease:	Boar St Com	BOPD:	
Location:	1H	BWPD:	
Sample Point:	Wellhead		

		Anions		mg/l	meq/l	Cations		mg/l	meq/l
Sampling date:	2/28/2025	Chloride:	105813.5	2983.94		Sodium:	64880.0	2822.12	
Analysis date:	3/8/2025	Bicarbonate:	610.0	10.00		Magnesium:	966.9	79.54	
Analysis:	Catalyst	Carbonate:		0.00		Calcium:	2765.0	137.97	
TDS (mg/l or g/m3):	178694	Sulfate:	2900.0	60.32		Potassium:	603.2	15.43	
Density (g/cm3):	1.120	Borate:	95.4	0.60		Strontium:	59.2	1.35	
Hydrogen Sulfide:	68	Phosphorus:		0.00		Barium:	0.2	0.00	
Carbon Dioxide:	80					Iron:	0.8	0.03	
Comments:		pH at time of sampling:		6.26		Manganese:	0.1	0.00	
		pH at time of analysis:							
		pH used in Calculation:		6.26		Conductivity (micro-ohms/cm):		189493	
		Temperature @ lab conditions(F):		75		Resistivity (ohm meter):		0.0528	

Values Calculated at the Given Conditions - Amounts of Scale in lb/1000 bbl										
Temp	Calcite CaCO3		Gypsum CaSO4*2H2O		Anhydrite CaSO4		Celestite SrSO4		Barite BaSO4	
°F	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount
80	0.26	25.04	-0.13	0.00	-0.11	0.00	-0.12	0.00	0.52	0.00
100	0.35	33.88	-0.21	0.00	-0.12	0.00	-0.15	0.00	0.32	0.00
120	0.44	43.01	-0.27	0.00	-0.11	0.00	-0.17	0.00	0.14	0.00
140	0.53	52.44	-0.33	0.00	-0.07	0.00	-0.18	0.00	-0.02	0.00
160	0.63	61.86	-0.37	0.00	-0.02	0.00	-0.18	0.00	-0.16	0.00
180	0.73	71.58	-0.41	0.00	0.06	112.24	-0.17	0.00	-0.27	0.00
200	0.82	81.31	-0.45	0.00	0.14	268.66	-0.16	0.00	-0.37	0.00
220	0.92	90.73	-0.48	0.00	0.24	423.32	-0.15	0.00	-0.45	0.00

Attachment 5

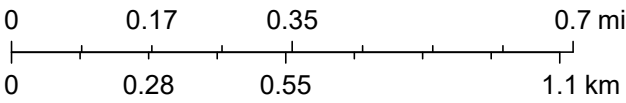
1 mile Water Well Lookup



7/3/2025, 10:16:02 AM

- OSE Water PODs
- PLSS Second Division
- PLSS First Division
- PLSS Townships

1:18,056



Esri, NASA, NGA, USGS, FEMA, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, USGS, OCD, BLM

Water Right Summary



[get
image
list](#)

WR File Number:	LWD 03209	Subbasin:	RA	Cross Reference:	LWD-RA-265
Primary Purpose:	PLS NON 72-12-1 LIVESTOCK WATERING				
Primary Status:	DCL Declaration				
Total Acres:	2.060	Subfile:		Header:	
Total Diversion:	4.130	Cause/Case:			
Owner:	BOGLE FARMS	Owner Class:	O w n e r		
Contact:	SCOTT BOGLE				

Documents on File

Transaction Images	Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/To	Acres	Dive
get images	694377	DCL	1991-07-10	DCL	PRC	LWD-RA-265	T	2.060	4.13

Current Points of Diversion

POD Number	Well Tag	Source	Q64	Q16	Q4	Sec	Tws	Rng	X	Y	Map	Other Location
LWD 03209 POD1						24	16S	30E	600502.0	3641483.0 *		

* UTM location was derived from PLSS - see Help

Priority Summary

Priority	Status	Acres	Diversion	POD Number	Source
1950-12-31	DCL	2.060	4.130	LWD 03209 POD1	

Place of Use

Q256	Q64	Q16	Q4	Sec	Tws	Rng	Acres	Diversion	CU	Use	Priority	Status	Other Location Des
				24	16S	30E	2.060	4.130		PLS	1950-12-31	DCL	

Source

Acres	Diversion	CU	Use	Priority	Source	Description
2.060	4.130		PLS	1950-12-31	SW	

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

7/3/25 10:10 AM MST

Water Rights Summary

Attachment 4



October 7, 2025

PN 1904.SEIS.00

Mr. Phillip Goetze, P.G.
NM EMNRD – Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

Subject: **Mack Energy Corporation**
Arrowhead SWD #1 - Seismic Potential Letter

Dear Mr. Goetze,

At the request of Mack Energy Corporation (Mack Energy), ALL Consulting, LLC (ALL) has assessed the potential injection-induced seismicity risks in the vicinity of Mack Energy's Arrowhead SWD #1 (Arrowhead SWD #1), a proposed saltwater disposal (SWD) facility in Eddy County, New Mexico, and summarized the findings in this letter. This assessment used publicly available data to identify the proximity and characteristics of seismic events and known faults to evaluate the potential for the operation of the Arrowhead SWD #1 to contribute to seismic activity in the area.

Geologic Evaluation

The Arrowhead SWD #1 is requesting a permit to inject into the Devonian Formation at a depth of 11,490 - 12,230 feet below ground surface (bgs). The Devonian Formation consists of cherty limestone and dolomites and is overlain by approximately 80 feet of low porosity and permeability Woodford Shale, which would prevent the upward migration of injection fluid and serve as the upper confining layer (see **Attachment 1**). Additionally, the Devonian Formation is underlain by various low porosity and permeability zones within the Middle Silurian, Fusselman, and Montoya Group, which consist of limestones, dolomites, and interbedded shale zones which serve as lower confining zones. No geophysical logs penetrating the Middle Silurian, Fusselman, and Montoya Group were available within 10 miles of the Arrowhead SWD #1. A stratigraphic chart depicting the geologic setting is included as **Figure 1**.¹

Seismic Events and Fault Data

A review of United States Geological Survey (USGS) and New Mexico Tech Seismological Observatory (NMTSO) earthquake catalogues determined that thirteen (13) seismic events have been recorded within a 100 square mile area [9.08-kilometer (km) radius] around the Arrowhead

¹ Yang, K.-M., & Dorobek, S. L. (1995). The Permian Basin of west Texas and New Mexico: Tectonic history of a "composite" Foreland Basin and its effects on stratigraphic development. *Stratigraphic Evolution of Foreland Basins*, 149–174. <https://doi.org/10.2110/pec.95.52.0149>

Mack Energy Corporation
Arrowhead SWD #1 Seismic Information
October 7, 2025

SWD #1. The closest recorded seismic event was a M1.4 that occurred on December 17, 2022, and was located approximately 1.08 miles east of the Arrowhead SWD #1 (see **Attachment 2**). **Per the USGS earthquake catalog, no seismic events M2.5 or greater have been recorded within 10 miles of the proposed SWD.**

Fault data from United States Geological Survey (USGS) and the Texas Bureau of Economic Geology (BEG)² indicates that the closest known fault is located approximately 1.19 miles east of the Subject Well (see **Attachment 2**). This identified fault is within the Precambrian basement, which is approximately 1,770 feet below the proposed injection interval.³ **Several Precambrian basement faults were identified within two miles of the subject well, or within the 100 square mile area of review centered on the subject well.** As such, a fault slip potential model has been prepared. A map of the seismic events and faults within 9.08 km of the Arrowhead SWD #1 is included as **Attachment 2**.

Seismic Potential Evaluation

Experience in evaluating induced seismic events indicates that most injection-induced seismicity throughout the U.S. (e.g., Oklahoma, Ohio, Texas, New Mexico, and Colorado) occurs as a result of injection into Precambrian basement rock, into overlying formations that are in hydraulic communication with the Precambrian basement rock, or as a result of injection near critically stressed and optimally oriented faults. Seismicity at basement depths occurs because critically stressed faults generally originate in crystalline basement rock and may also extend into overlying sedimentary formations.⁴

Injection into either the Precambrian basement rock or its overlying formations that are hydraulically connected to the basement rock through faulting or fracture networks can increase the pore pressure and may lead to the fault slipping, resulting in a seismic event.⁴ As such, the

**Figure 1 – Delaware Basin Stratigraphic Chart
(Adapted from Yang and Dorobek 1995)**

SYSTEM	SERIES/ STAGE	CENTRAL BASIN PLATFORM	DELAWARE BASIN
PERMIAN	OCHOAN	DEWEY LAKE RUSTLER SALADO	DEWEY LAKE RUSTLER SALADO CASTILE
	GUADALUPIAN	TANSILL YATES SEVEN RIVERS QUEEN GRAYBURG SAN ANDRES GLORIETA	DELAWARE MT GROUP BELL CANYON CHERRY CANYON BRUSHY CANYON
	LEONARDIAN	CLEAR FORK WICHITA	BONE SPRING
	WOLFCAMPIAN	WOLFCAMP	WOLFCAMP
PENNSYLVANIAN	VIRGILIAN	CISCO	CISCO
	MISSOURIAN	CANYON	CANYON
	DESMOINESIAN	STRAWN	STRAWN
	ATOKAN	ATOKA	ATOKA
	MORROWAN	(ABSENT)	MORROW
MISSISSIPPIAN	CHESTERIAN MERAMECIAN OSAGEAN KINDERHOOKIAN	CHESTER MERAMEC OSAGE KINDERHOOK	CHESTER MERAMEC OSAGE KINDERHOOK
		WOODFORD DEVONIAN	WOODFORD DEVONIAN
DEVONIAN			
SILURIAN		SILURIAN SHALE FUSSELMAN	MIDDLE SILURIAN FUSSELMAN
ORDOVICIAN	UPPER	MONTOYA	SYLVAN MONTOYA
	MIDDLE	SIMPSON	SIMPSON
	LOWER	ELLENBURGER	ELLENBURGER
CAMBRIAN	UPPER	CAMBRIAN	CAMBRIAN
PRECAMBRIAN			

² Horne E. A. Hennings P. H., and Zahm C. K. 2021. Basement structure of the Delaware Basin, in The Geologic Basement of Texas: A Volume in Honor of Peter Flawn, Callahan O. A., and Eichubl P., The University of Texas at Austin, Bureau of Economic Geology.

³ G. Randy Keller, J. M. Hills & Rabah Djeddi, A regional geological and geophysical study of the Delaware Basin, New Mexico and West Texas, Trans Pecos Region (West Texas) (1980).

⁴ Ground Water Protection Council and Interstate Oil and Gas Compact Commission. *Potential Injection-Induced Seismicity Associated with Oil & Gas Development: A Primer on Technical and Regulatory Considerations Informing Risk Management and Mitigation*. 2015. 141 pages.

Mack Energy Corporation
Arrowhead SWD #1 Seismic Information
October 7, 2025

vertical distance between the injection formation and Precambrian basement rock and the presence or lack of faulting within the injection interval are major considerations when determining the risk of injection-induced seismicity.

Geophysical data from nearby well records, aeromagnetic surveys, and gravity surveys indicate the top of the Precambrian basement to be approximately 14,000 feet bgs at the Arrowhead SWD #1, or approximately 1,770 feet below the proposed injection interval.³ In addition, publicly available fault data does not indicate any transmissive faulting is present above the Precambrian basement around the Arrowhead SWD #1. **There are insufficient Precambrian basement penetrations and/or well data regarding Precambrian basement depth to generate an accurate structural contour map of the Precambrian basement in the vicinity of the proposed SWD.**

Per the NMTSO seismic catalog, the nearest reported event was a M1.4 which occurred on December 17, 2022, at 5.00 km depth. The default reported depth of 5.00 km indicates the seismic network in the area is not dense enough to accurately report hypocenter depths.

Class II SWDs in New Mexico are administratively permitted with a maximum pressure gradient of 0.2 psi/ft. Review of New Mexico Oil Conservation Division (OCD) Order IP-537 from the Mack Energy Round Tank SWD #1, which is located approximately 11 miles northwest of the Arrowhead SWD #1, determined the fracture gradient of the Devonian Formation in the region is 0.41 psi/ft from an approved step-rate test. Typical SWD permitting standards in New Mexico would indicate that formation parting pressure would not be exceeded by the Arrowhead SWD #1.

Fault Slip Potential Modeling

Due to the presence of mapped Precambrian basement faults within the 100 square mile area of review for the Arrowhead SWD #1, a Fault Slip Potential (FSP) model was prepared to indicate the likelihood that operation of the Arrowhead SWD #1 would result in a seismic event based on the proximity and characteristics of known injection rates, faults, and subsurface conditions. A map of the FSP area, model parameters, nearby deep SWD parameters, and model run results are included as **Attachment 3**.

The FSP modeling results through 25 years, with injection rates that are likely overestimated, resulted in FSP values of 0.01, or less, on all mapped faults within 100 square miles of the Arrowhead SWD #1 indicating the area presents little to no risk for injection induced seismicity.

Mack Energy Corporation
Arrowhead SWD #1 Seismic Information
October 7, 2025

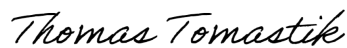
Conclusion

As an expert on the issue of induced seismicity, seismic monitoring, and mitigation, it is my opinion that the potential for the Arrowhead SWD #1 to cause injection-induced seismicity is expected to be minimal, at best. This conclusion assumes the Arrowhead SWD #1 will be operated below formation parting pressure and is based on (1) the presence of numerous confining layers above and below the injection interval, (2) the vertical and lateral distance between the injection zone and Precambrian basement rock in which the nearest fault has been identified, and (3) Fault Slip Potential modeling results which indicate little to no fault slip potential on mapped faults near the Arrowhead SWD #1.

Sincerely,
ALL Consulting



Reed Davis
Geophysicist



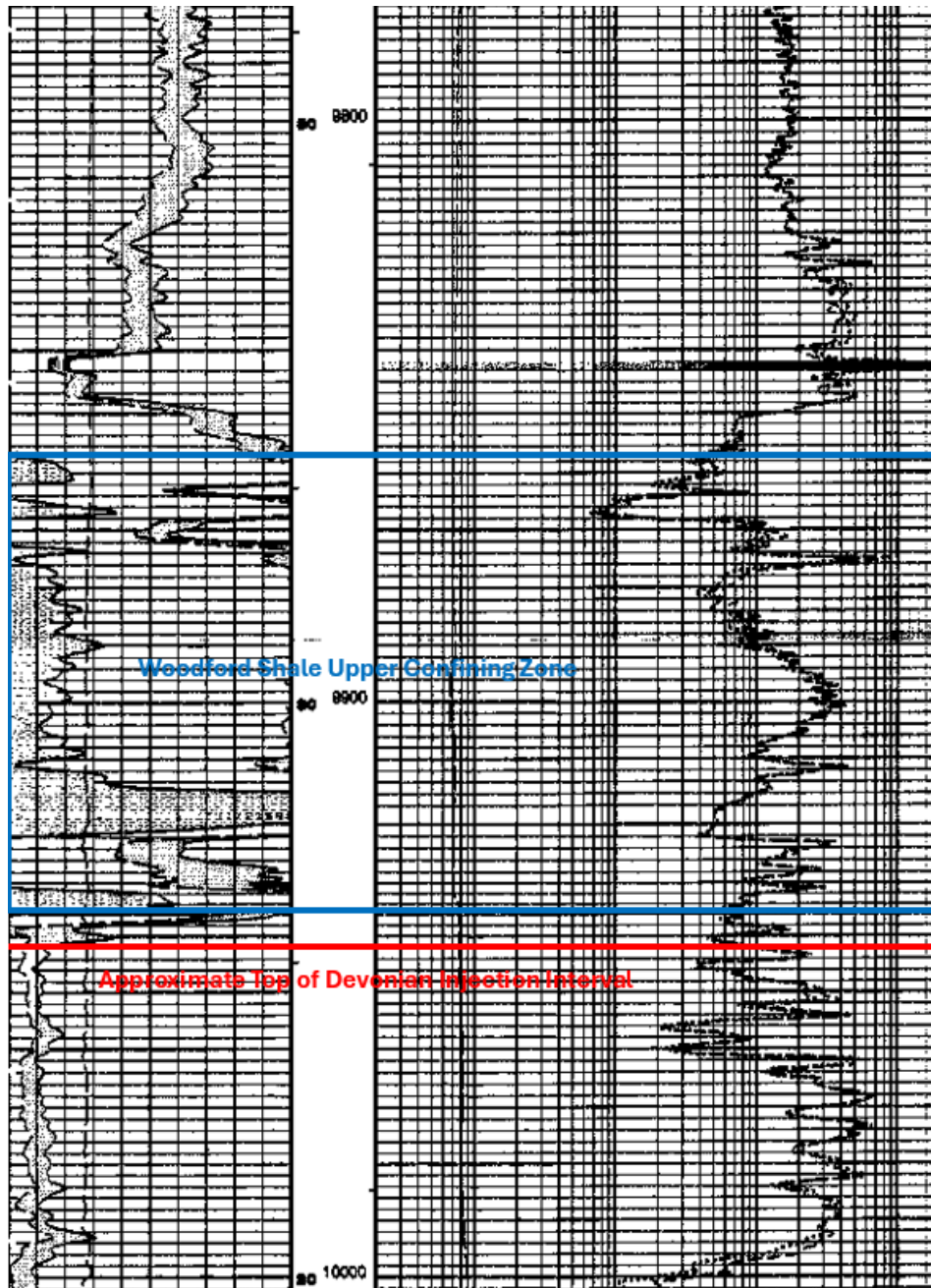
Thomas Tomastik
Chief Geologist

Mack Energy Corporation
Arrowhead SWD #1 Seismic Information
October 7, 2025

Attachment 1
Woodford Shale Upper Confining Zone

Mack Energy Corporation
Arrowhead SWD #1 Seismic Information
October 7, 2025

Woodford Shale Upper Confining Zone from API No. 015-32444

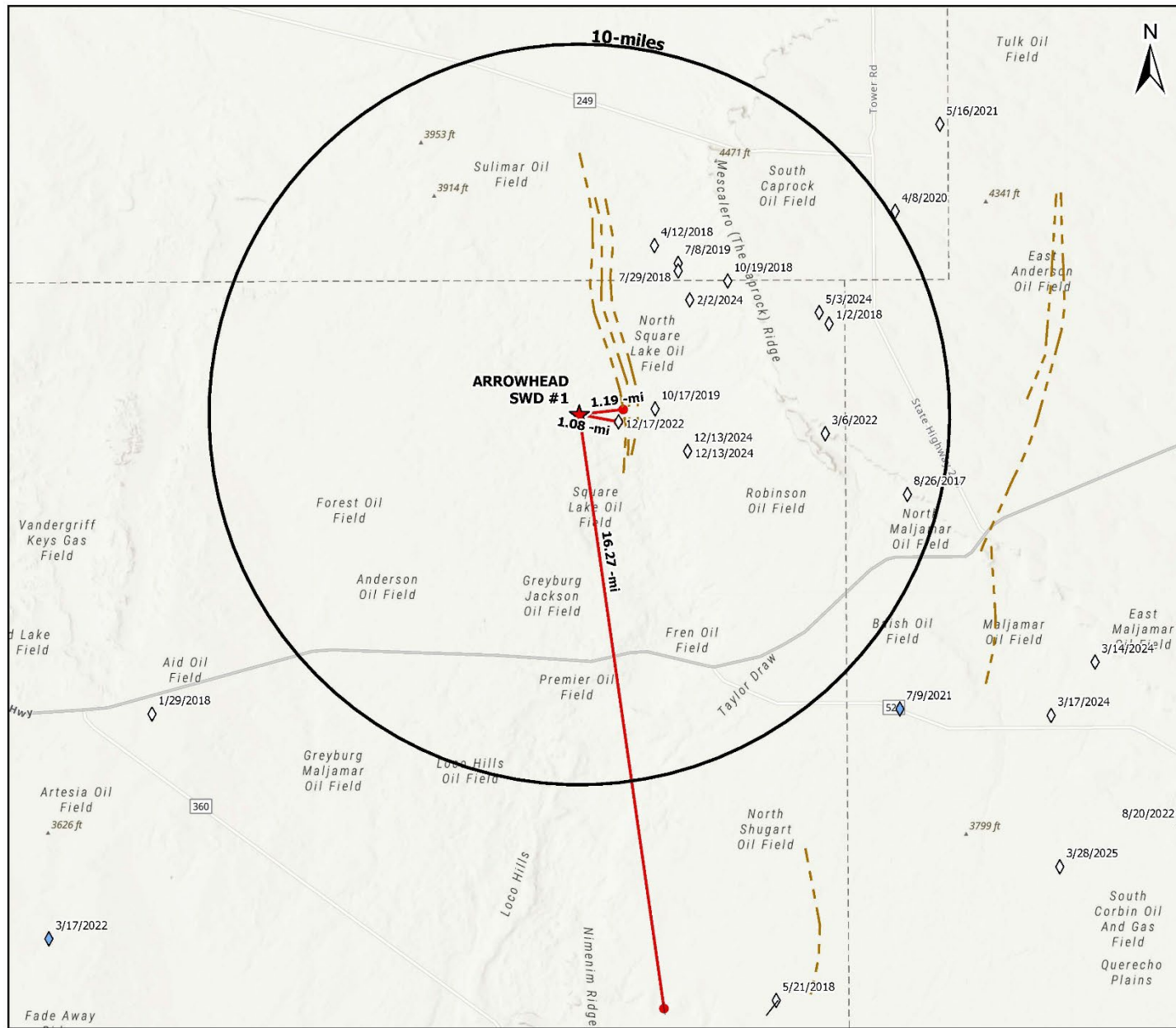


Mack Energy Corporation
Arrowhead SWD #1 Seismic Information
October 7, 2025

Attachment 2
Seismic Event Map

Mack Energy Corporation
Arrowhead SWD #1 Seismic Information
October 7, 2025

Arrowhead SWD #1 Nearby Seismic Events and Faults



Seismic Analysis Map

ARROWHEAD SWD #1 EDDY COUNTY, NEW MEXICO

Proj Mgr:
Reed Davis

September 15, 2025

Mapped by:
Ben Bockelmann

Prepared for:



Prepared by:

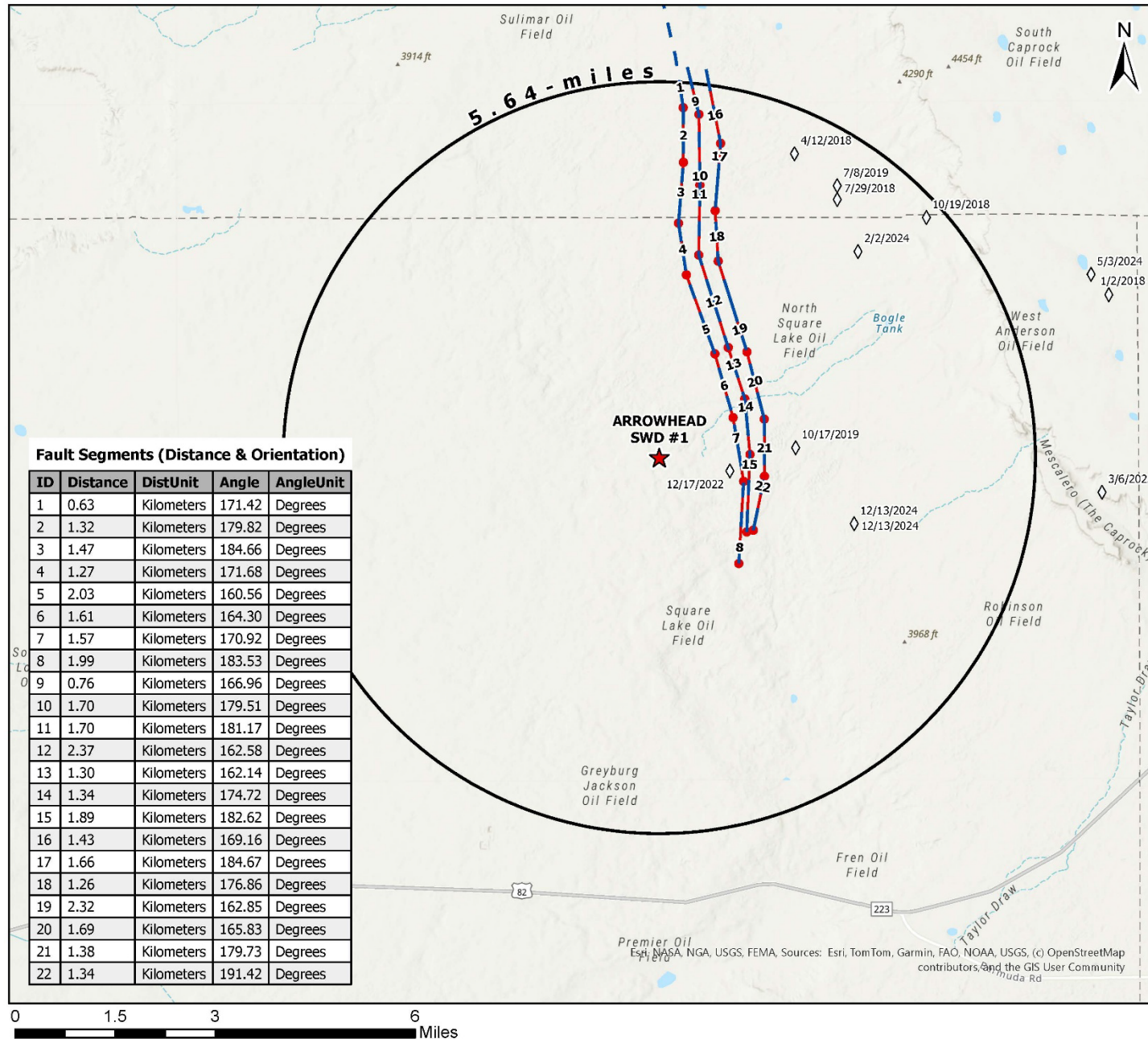


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Arrowhead SWD #1 Seismic Information
October 7, 2025

Attachment 3
FSP Area Map, Parameters, and Results

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Arrowhead SWD #1 Seismic Information
October 7, 2025

Arrowhead SWD #1 FSP Area Map



Legend

- ★ Proposed SWD
- Shallow Faults (0)
- Deep Faults (3)

USGS Seismic Events - 8/20/2025

Magnitude

- 0.0 - 2.0 (0)
- 2.1 - 3.0 (0)
- 3.1 - 4.0 (0)
- 4.1 - 5.4 (0)

NMTSO Seismic Events - 9/11/2025

Magnitude

- ◇ 0 - 2.0 (12)
- ◇ 2.1 - 3.0 (0)
- ◇ 3.1 - 4.0 (0)
- ◇ 4.1 - 4.5 (0)

FSP Area Map

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Arrowhead SWD #1 FSP Parameters

Parameter	Value	Source
Vertical Stress Gradient (psi/ft)	1.05	ALL Research / Standard Value (2025)
Horizontal Stress Direction (degrees azimuth)	30	Lund Snee (2020) ⁵
Reference Depth (ft)	11,490	Mack Energy (2025)
Initial Reservoir Pressure Gradient (psi/ft)	0.43	ALL Research / Standard Value (2025)
A-Phi Parameter	0.52	Lund Snee (2020)
Friction Coefficient	0.6	Lund Snee (2020)
Injection Interval Thickness (ft)	740	Mack Energy (2025)
Porosity (%)	5	Nearby Geophysical Logs (2025)
Permeability (mD)	35	Nearby Geophysical Logs (2025)
Fault Strike (degrees)	Varies	BEG Fault Data (2025)
Fault Dip	60	BEG Fault Data (2025)
Fluid Density (kg/m ³)	1040	ALL Research and Reynolds (2019) ⁶
Dynamic Viscosity (Pa*s)	0.0003	ALL Research and Reynolds (2019)
Fluid Compressibility (Pa ⁻¹)	4.70E-10	ALL Research and Reynolds (2019)
Rock Compressibility (Pa ⁻¹)	8.70E-10	ALL Research and Reynolds (2019)

⁵ Lund Snee, Jens-Erik, 2020, State of Stress in North America: Seismicity, Tectonics, and Unconventional Energy Development [Ph.D. thesis]: Stanford University, 254p.

⁶ Renolds, Todd. 2019. "FSP Analysis (Fault Slip Potential) Exhibits." New Mexico Oil Conservation Division Case No. 20313, Case No. 20314, and Case No. 20472.

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Arrowhead SWD #1 Seismic Information
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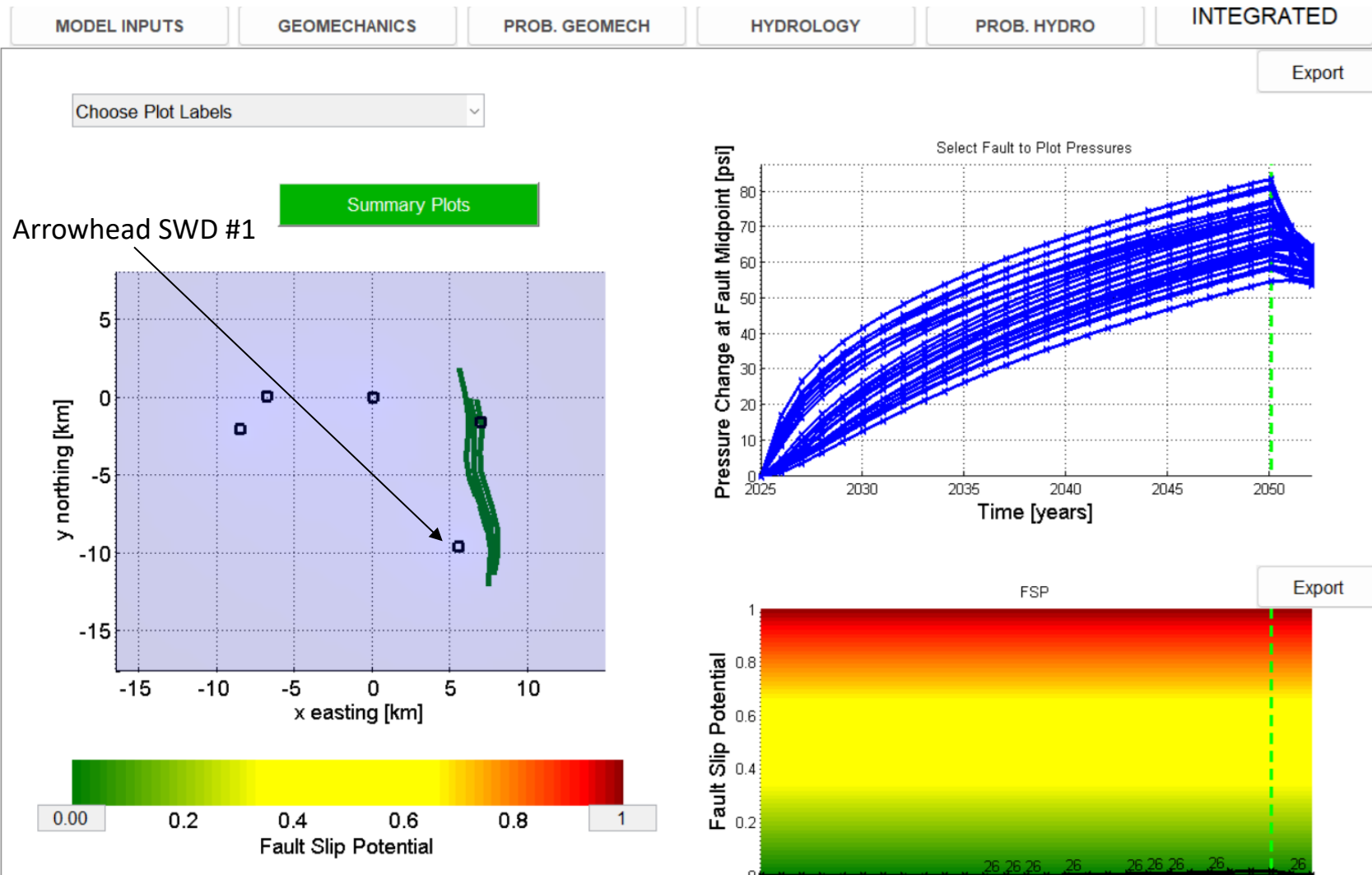
Arrowhead SWD #1 Deep SWD Parameters

SWD Name (API)	SWD Status	Injection Rate (BWPD)	Modeled Time Period
Arrowhead SWD #1	Pending	20,000	2025 - 2050
Manitoba SWD #1	Pending	15,000	2025 - 2050
Sam Federal SWD #3 (05-29104)	Active	1,267	2025 – 2050
Fraser SWD #1H (05-64388)	Pending	15,000*	2025 – 2050
Round Tank SWD #1 (05-64095)	Active	7,900	2025 - 2050
Notes: Pending SWDs modeled at maximum permitted or requested injection rate when available. Active SWDs modeled at permitted injection rate when available, or maximum monthly reported volume when permitted rate unavailable. *Permitted / requested rate unavailable. Modeled at 15,000 BWPD.			

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Arrowhead SWD #1 Seismic Information
October 7, 2025

Fault Slip Potential

Arrowhead SWD #1 FSP Results



Attachment 6

Arrowhead SWD #1


XII. AFFIRMATIVE STATEMENT

RE: Arrowhead SWD #1

We have examined the available 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.

Mack Energy Corporation

Date: 6/23/25


Charles Sadler, Geologist

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
<https://www.emnrd.nm.gov/oed/contact-us>

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 513222

CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 513222
	Action Type: [C-108] Fluid Injection Well (C-108)

CONDITIONS

Created By	Condition	Condition Date
erica.gordan	None	10/10/2025