

**District I**  
1625 N. French Dr., Hobbs, NM 88240  
Phone: (575) 393-6161 Fax: (575) 393-9720

**District II**  
811 S. First St., Artesia, NM 88210  
Phone: (575) 748-1283 Fax: (575) 748-9720

**District III**  
1000 Rio Brazos Road, Aztec, NM 87410  
Phone: (505) 334-6178 Fax: (505) 334-6170

**District IV**  
1220 S. St. Francis Dr., Santa Fe, NM 87505  
Phone: (505) 476-3460 Fax: (505) 476-3462

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

**NM OIL CONSERVATION**  
**ARTESIA DISTRICT**

NOV 13 2018

Form C-101  
Revised July 18, 2013

**RECEIVED** ☐ AMENDED REPORT

**APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE**

1. Operator Name and Address 3 BEAR FIELD SERVICE, LLC 415 W. WALL ST., STE 1212 MIDLAND, TEXAS 79701		2. OGRID Number 372603
		3. API Number 30-015- <del>700</del> <b>45443</b>
4. Property Code <b>322872</b>	5. Property Name BEAR CUB SWD	6. Well No. 1

**7. Surface Location**

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County
H	36	19S	28E		1,561	FNL	1,276	FEL	EDDY

**8. Proposed Bottom Hole Location**

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County
-	-	-	-	-	-	-	-	-	-

**9. Pool Information**

Pool Name SWD; Silurian-Devonian	Pool Code 97869
-------------------------------------	--------------------

**Additional Well Information**

11. Work Type N	12. Well Type SWD	13. Cable/Rotary R	14. Lease Type Private <b>Surf</b>	15. Ground Level Elevation 3,293.12'
16. Multiple N	17. Proposed Depth 14,000	18. Formation Siluro-Devonian	19. Contractor TBD <b>State Minerals</b>	20. Spud Date ASAP
Depth to Ground water 75'		Distance from nearest fresh water well 1,251'		Distance to nearest surface water > 1 mile

☒ We will be using a closed-loop system in lieu of lined pits

**21. Proposed Casing and Cement Program**

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Conductor	26"	20"	94 lb/ft	120'	328	Surface
Surface	17-1/2"	13-3/8"	54.5 lb/ft	380'	350	Surface
Production	12-1/4"	9-5/8"	40 lb/ft	4,440'	1,193	Surface
Liner	8-1/2"	7-5/8"	39 lb/ft	4,140'-12,177'	773	4,140'
Tubing	6-1/2"	5.5"	17 lb/ft	0'-12,080'	N/A	N/A

**Casing/Cement Program: Additional Comments**

See attached schematic.

**22. Proposed Blowout Prevention Program**

Type	Working Pressure	Test Pressure	Manufacturer
Double Hydraulic/Blinds, Pipe	10,000 psi	8,000 psi	TBD - Schaffer/Cameron

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief.  
I further certify that I have complied with 19.15.14.9 (A) NMAC ☐ and/or 19.15.14.9 (B) NMAC ☒, if applicable.  
Signature:

Printed name: Tyler Moehlman

Title: Consulting Engineer

E-mail Address: tyler.moehlman@lonquist.com

Date: November 12, 2018

Phone: 713-987-4144

**OIL CONSERVATION DIVISION**

Approved By:

*Raymond W. Bodanz*

Title: **Geologist**

Approved Date: **11/15/18**

Expiration Date: **11/15/2020**

Conditions of Approval Attached **Approved 2108**

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State of New Mexico  
Energy, Minerals & Natural Resources Department  
OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

NM OIL CONSERVATION  
ARTESIA DISTRICT

NOV 13 2018

Form C-102

Revised August 1, 2011

RECEIVED

Submit one copy to appropriate  
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number <b>30-015-45443</b>		2 Pool Code <b>97869</b>		3 Pool Name <b>SWD; Silurian-Devonian</b>	
4 Property Code <b>322872</b>		5 Property Name <b>BEAR CUB SWD</b>			6 Well Number <b>#1</b>
7 OGRID No. <b>372603</b>		8 Operator Name <b>3BEAR FIELD SERVICES, LLC</b>			9 Elevation <b>3293.12'</b>

10 Surface Location									
UL or lot no. <b>H</b>	Section <b>36</b>	Township <b>19 S</b>	Range <b>28 E</b>	Lot Idn	Feet from the <b>1561</b>	North/South line <b>NORTH</b>	Feet from the <b>1276</b>	East/West line <b>EAST</b>	County <b>EDDY</b>

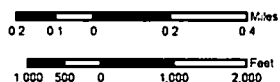
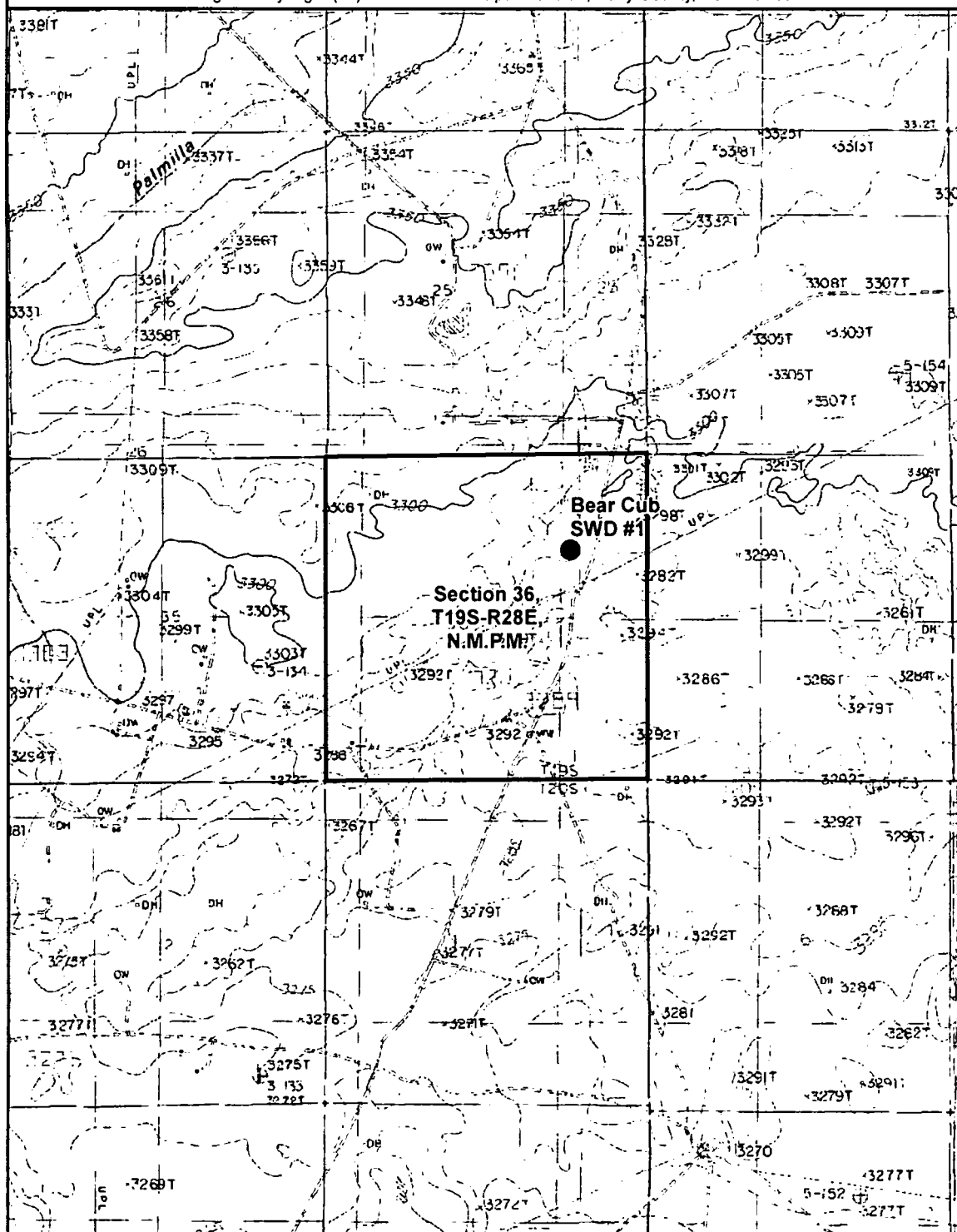
11 Bottom Hole Location If Different From Surface									
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
12 Dedicated Acres		13 Joint or Infill		14 Consolidation Code		15 Order No.			

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

<p>16</p>		<p>17 OPERATOR CERTIFICATION</p> <p>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and 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 such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p><i>T.M.</i> 11/12/2018 Signature Date Tyler Moehlman 11/12/2018 Printed Name Date tyler.moehlman@lonquist.com 11/12/2018 Email Address Date</p>	
<p>18</p> <p>19 SURVEYOR CERTIFICATION</p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p>12 Nov 2018 Date of Survey Date Signature and Seal of Professional Surveyor:  Certificate Number 20559</p>		<p>20</p> <p>RWP 11-15-18</p>	

# LOCATION VERIFICATION MAP

Section thirty-six (36), Township nineteen (19) South,  
Range twenty-eight (28) East of the Principal Meridian, Eddy County, New Mexico



Map Tech: VKV

1" = 2,000'

Date: 10/30/2018

1:24,000



**TRANSGLOBAL**  
SERVICES LLC

1100 Macon Street  
Fort Worth, Texas 76102

Northwest  
Shelf

**Delaware**  
**Basin**

CULBERSON

LOVING

REEVES

WARD

WINKLER

ECTOR

Coordinate System  
NAD 1983 StatePlane New Mexico East FIPS 3001 Feet  
Projection: Transverse Mercator  
Datum: North American 1983  
False Easting: 541,337.5000  
False Northing: 0.0000  
Central Meridian: -104.3333  
Scale Factor: 0.9999  
Latitude Of Origin: 31.0000  
Units: Foot US



## BEAR CUB SWD #1

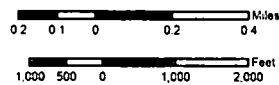
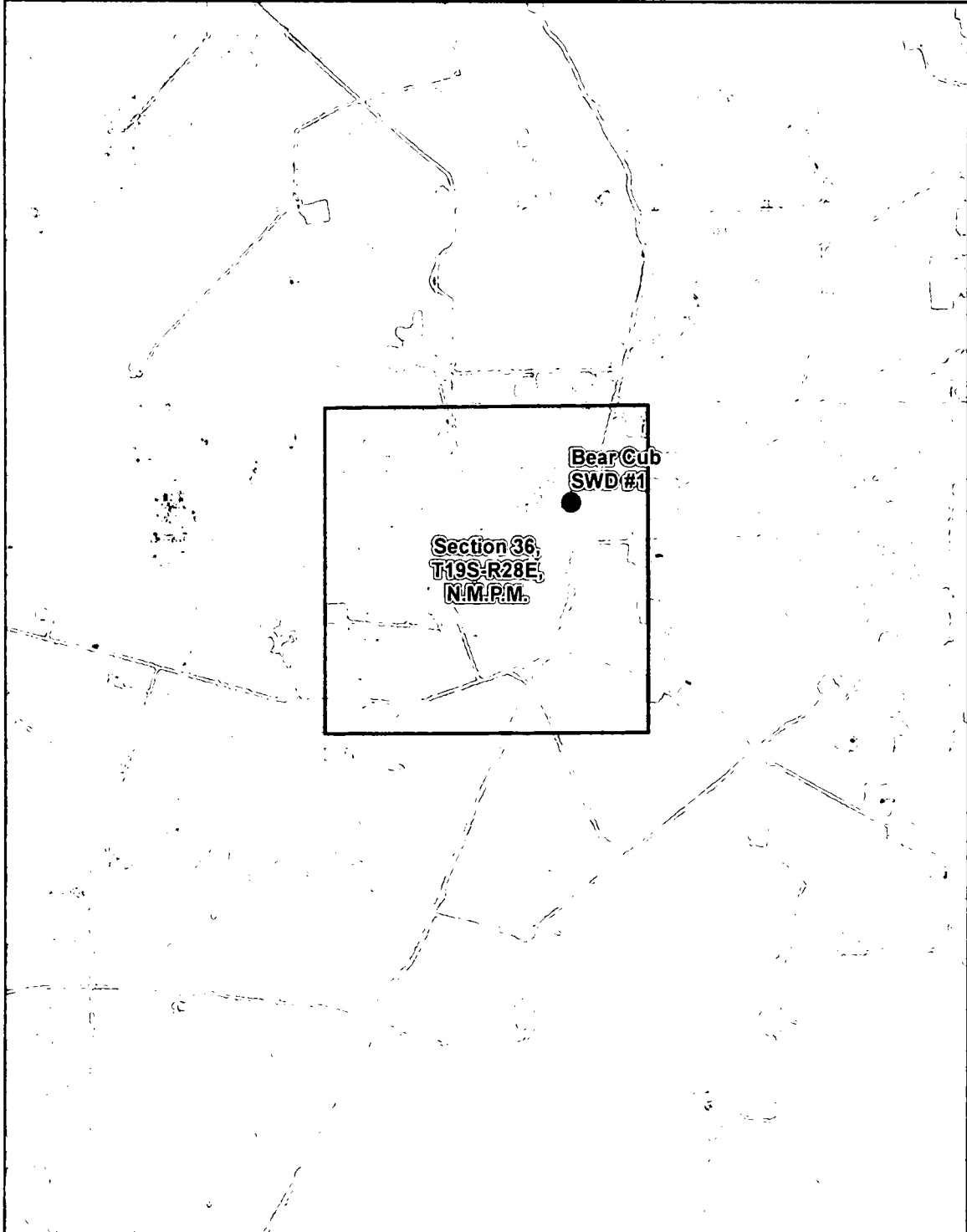
SHL Location & Penetration Point:  
1561' FNL & 1276' FEL  
Section 36, Township 19 South,  
Range 28 East of P.M.  
Eddy County, New Mexico

OPERATOR:  
3BEAR FIELD SERVICES, LLC



# AERIAL MAP

Section thirty-six (36), Township nineteen (19) South,  
Range twenty-eight (28) East of the Principal Meridian, Eddy County, New Mexico

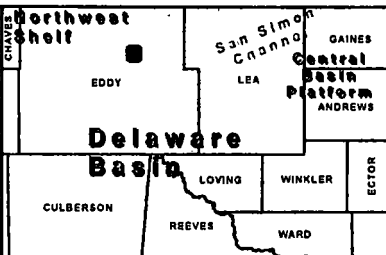


Map Tech: VKV 1" = 2,000'

Date: 10/30/2018 1:24,000



1100 Macon Street  
Fort Worth, Texas 76102



Coordinate System:  
NAD 1983 StatePlane New Mexico East FIPS 3001 Feet  
Projection: Transverse Mercator  
Datum: North American 1983  
False Easting: 541,337.5000  
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Central Meridian: -104.3333  
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Latitude Of Origin: 31.0000  
Units: Feet US



## BEAR CUB SWD #1

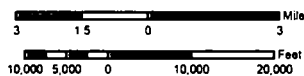
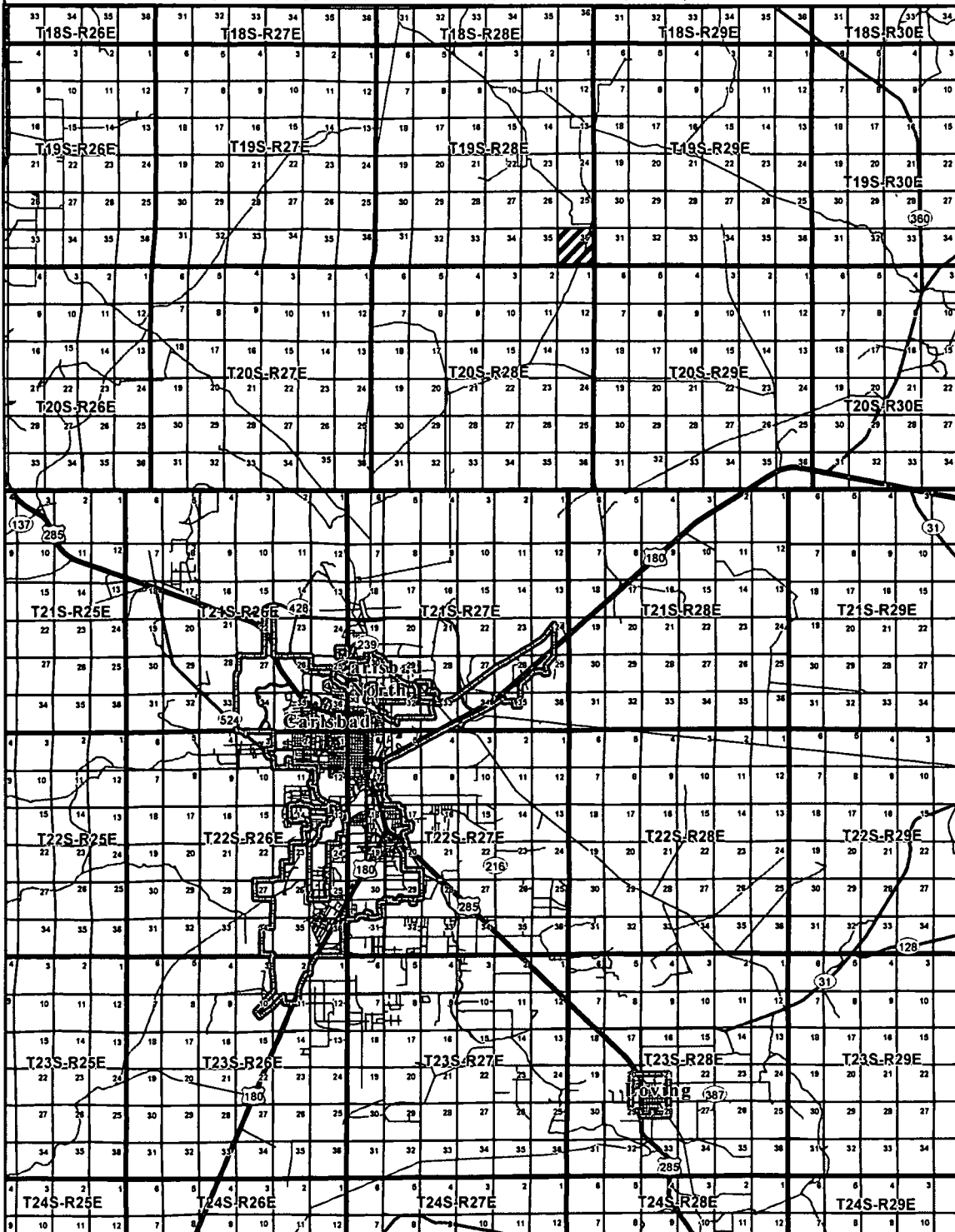
SHL Location & Penetration Point:  
1561' FNL & 1276' FEL  
Section 36, Township 19 South,  
Range 28 East of P.M.  
Eddy County, New Mexico

OPERATOR:  
3BEAR FIELD SERVICES, LLC



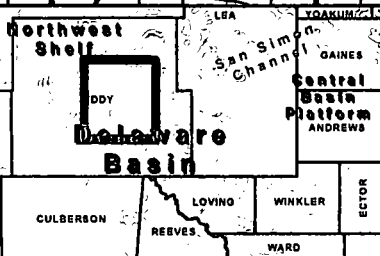
# VICINITY MAP

Section thirty-six (36), Township nineteen (19) South,  
Range twenty-eight (28) East of the Principal Meridian, Eddy County, New Mexico



Map Tech: VKV 1" = 17,500'

Date: 10/30/2018 1:210,000



## BEAR CUB SWD #1

SHL Location & Penetration Point:  
1561' FNL & 1276' FEL  
Section 36, Township 19 South,  
Range 28 East of P.M.  
Eddy County, New Mexico

OPERATOR:  
3BEAR FIELD SERVICES, LLC



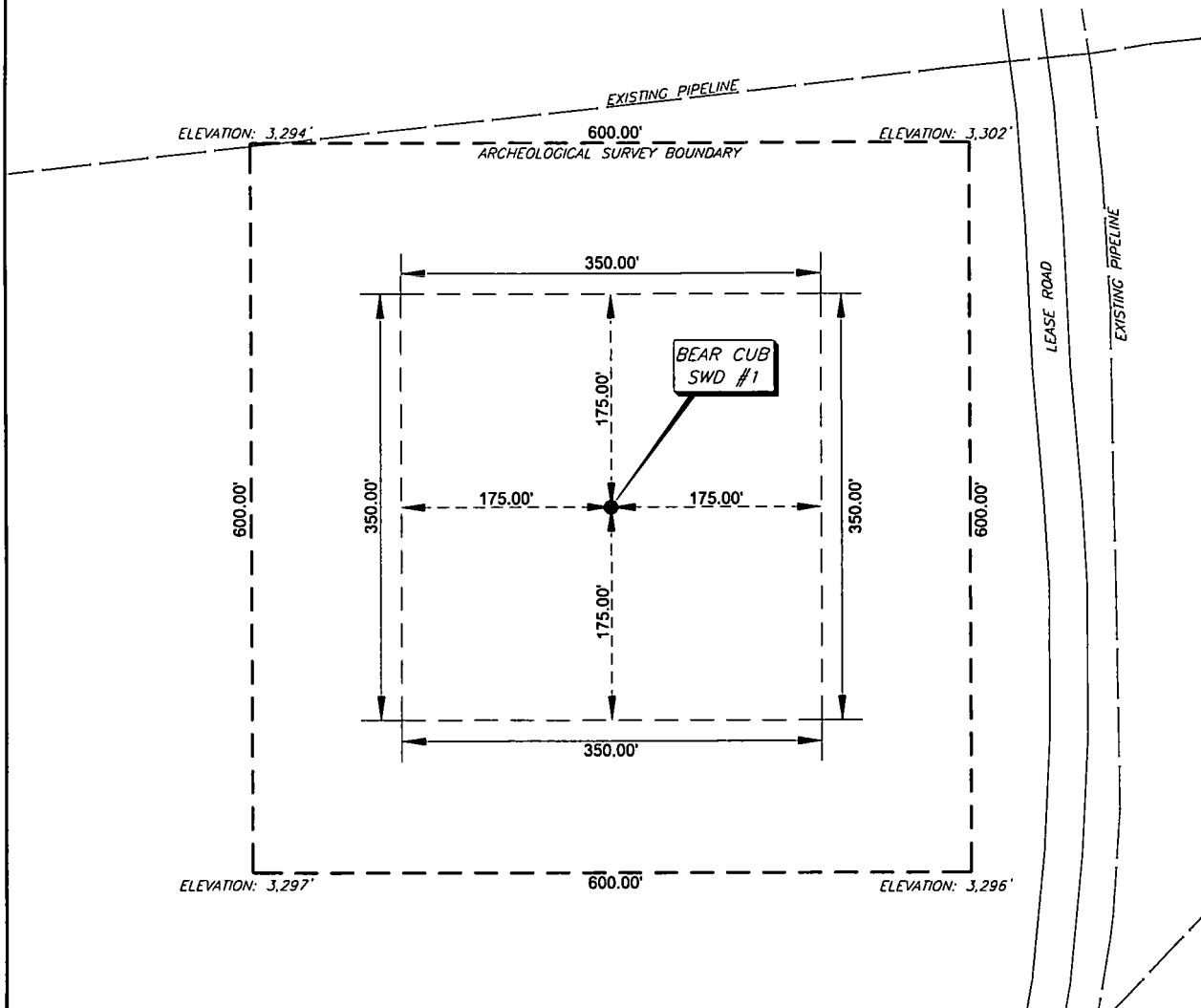
1100 Macon Street  
Fort Worth, Texas 76102

Coordinate System:  
NAD 1983 StatePlane New Mexico East FIPS 3001 Feet  
Projection: Transverse Mercator  
Datum: North American 1983  
False Easting: 541,337.5000  
False Northing: 0.0000  
Central Meridian: -104.3333  
Scale Factor: 0.9999  
Latitude Of Origin: 31.0000  
Units: Foot US



# EDDY COUNTY, NEW MEXICO

SECTION THIRTY-SIX (36), TOWNSHIP NINETEEN (19) SOUTH,  
RANGE TWENTY-EGHT (28) EAST OF THE PRINCIPAL MERIDIAN



COORDINATE TABLE				
WELL NAME	NORTHING (N.A.D. 27)	EASTING (N.A.D. 27)	NORTHING (N.A.D. 83)	EASTING (N.A.D. 83)
BEAR CUB SWD #1 SURFACE LOCATION & PENETRATION POINT	589417.80	563991.90	589479.67	605171.92
ELEVATION	LATITUDE (N.A.D. 27)	LONGITUDE (N.A.D. 27)	LATITUDE (N.A.D. 83)	LONGITUDE (N.A.D. 83)
3,293.12'	32.620241	-104.125493	32.620359	-104.126000

THE BEAR CUB SWD #1 IS LOCATED  
APPROXIMATELY 15 MILES NORTHEAST OF  
CARLSBAD, NEW MEXICO



## NOTES:

1.) BEARINGS & COORDINATES SHOWN HEREON ARE REFERENCED TO THE NEW MEXICO STATE PLANE COORDINATE SYSTEM, N.A.D. 27 & 83 DATUM (NEW MEXICO EAST ZONE) DERIVED FROM GPS OBSERVATIONS AND ARE BASED REFERENCE STATIONS - 'E 148' - MALJAMAR NE (1985)

2.) LATITUDE & LONGITUDE ARE NAD 83 & 27 GEOGRAPHIC.

3.) THIS IS AN WELL PLAT AND DOES NOT REPRESENT A TRUE BOUNDARY SURVEY. THIS SURVEY IS BASED ON OWNERSHIP AND EASEMENT INFORMATION PROVIDED BY APACHE CORPORATION. SURVEYOR DID NOT ABSTRACT SUBJECT TRACT AND THERE MAY BE EASEMENTS OR OTHER ENCUMBRANCES THAT AFFECT THE SUBJECT TRACT THAT ARE NOT SHOWN HEREON.



Location of  
**BEAR CUB SWD #1**

Surface Location & Penetration Point: 1581' FNL & 1276' FEL

Section 36, Township 19 South, Range 28 East of P.M.

Eddy County, New Mexico



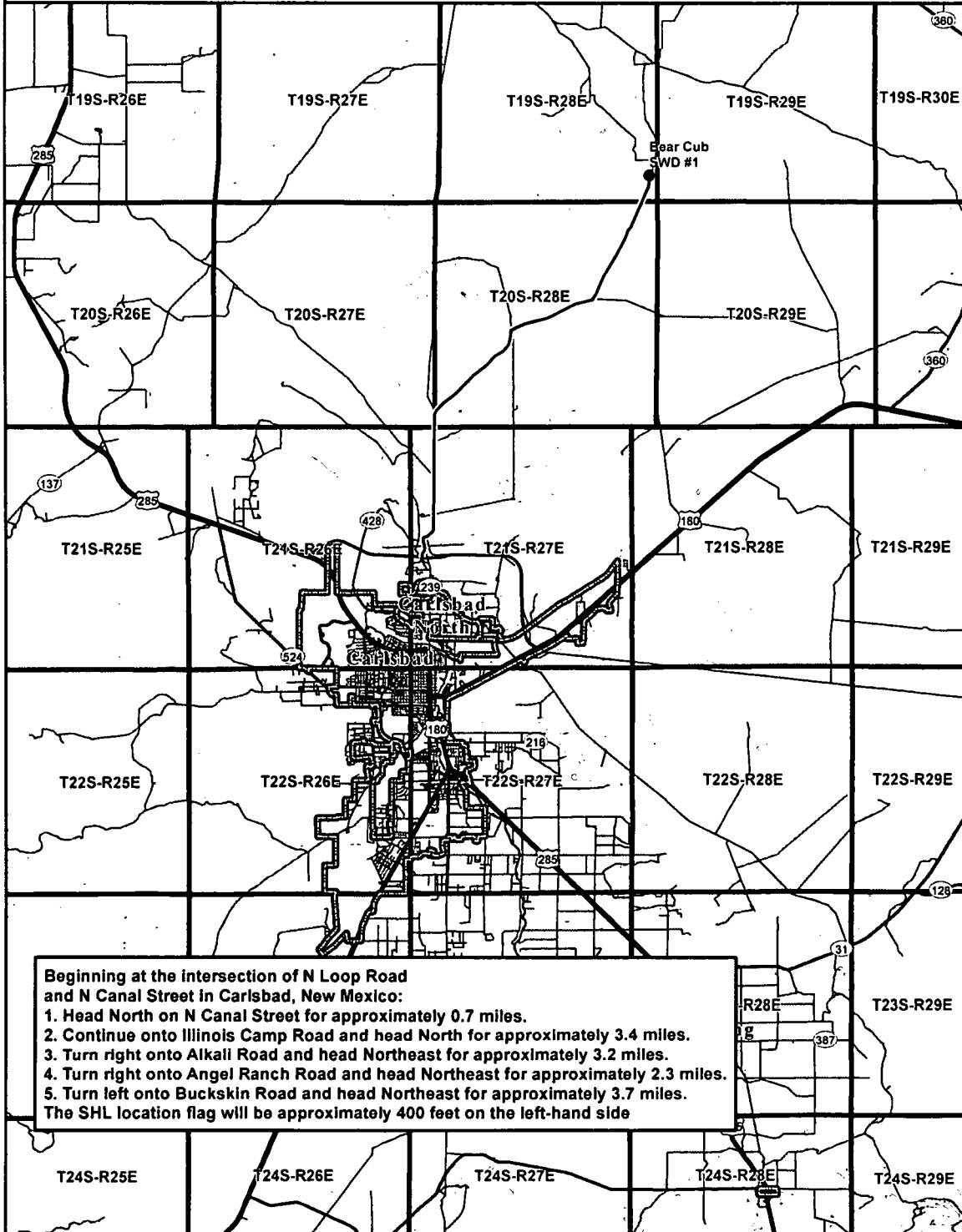
**TRANSGLOBAL  
SERVICES LLC**

1100 Macon Street  
Fort Worth, Texas 76102  
(817) 529-1180 ~ Fax (817) 529-1181

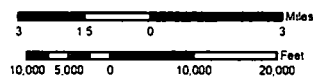
DRAWN BY: JWP	DATE: 10-30-2018	DWG. NO.	REV.
CHECKED BY: JLW	DATE: 10-30-2018	Dr. Orphan (Title Resources) Title Resources Team Folder\org\at\1810010_Bear Cub SWD #1 Exhibits	1
SCALE: 1" = 100'	APP:	PAGE 1 OF 1	

# ROAD ROUTE MAP

Section thirty-six (36), Township nineteen (19) South,  
Range twenty-eight (28) East of the Principal Meridian, Eddy County, New Mexico



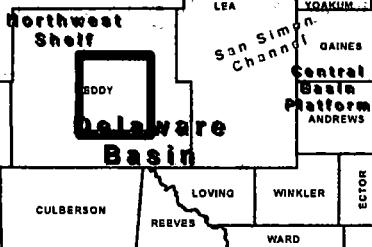
Beginning at the intersection of N Loop Road  
and N Canal Street in Carlsbad, New Mexico:  
1. Head North on N Canal Street for approximately 0.7 miles.  
2. Continue onto Illinois Camp Road and head North for approximately 3.4 miles.  
3. Turn right onto Alkali Road and head Northeast for approximately 3.2 miles.  
4. Turn right onto Angel Ranch Road and head Northeast for approximately 2.3 miles.  
5. Turn left onto Buckskin Road and head Northeast for approximately 3.7 miles.  
The SHL location flag will be approximately 400 feet on the left-hand side



Map Tech: VKV 1" = 17,500'

Date: 10/30/2018 1:210,000

**TRANSGLOBAL**  
SERVICES LLC  
1100 Macon Street  
Fort Worth, Texas 76102



Coordinate System:  
NAD 1983 StatePlane New Mexico East FIPS 3001 Feet  
Projection: Transverse Mercator  
Datum: North American 1983  
False Easting: 541,337.5000  
False Northing: 0.0000  
Central Meridian: -104.3333  
Scale Factor: 0.9999  
Latitude Of Origin: 31.0000  
Units: Feet US



## BEAR CUB SWD #1

SHL Location & Penetration Point:  
1561' FNL & 1276' FEL  
Section 36, Township 19 South,  
Range 28 East of P.M.  
Eddy County, New Mexico

OPERATOR:  
3BEAR FIELD SERVICES, LLC





3Bear Field Services, LLC

Bear Cub SWD No. 1

NM OIL CONSERVATION  
ARTESIA DISTRICT

NOV 13 2018

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**Supplemental Information**

**III. Well Data**

**A. Wellbore Information**

1.

Well information	
Lease Name	Bear Cub SWD
Well No.	1
Location	S-36 T-19S R-28E
Footage Location	1,561' FNL & 1,276' FEL

2.

**a. Wellbore Description**

Casing Information				
Type	Conductor	Intermediate	Intermediate 2	Production
OD	20"	13.375"	9.625"	7.625"
WT	0.876"	0.76"	0.79"	0.500"
ID	19.124"	12.615"	8.835"	6.625"
Drift ID	18.936"	12.459"	8.679"	6.500"
COD	21"	14.375"	10.625"	7.625"
Weight	94 lb/ft	54.5 lb/ft	40 lb/ft	39 lb/ft
Grade	H-40 STC	J-55 BTC	HCL-80 BTC	P-110 UFJ
Hole Size	26"	17.5"	12.25"	8.5"
Depth Set	120'	380'	4,440'	4,140'-12,177'



b. Cementing Program

Cement Information				
Casing String	Conductor	Intermediate 1	Intermediate 2	Liner
Lead Cement	Class H	HalCem	Stage 1: NeoCem Stage 2: NeoCem Stage 3: ExtendaCem	VERSACEM w/ gas migration control additives
Lead Cement Volume	328 sks	245 sks	Stage 1: 215 sks Stage 2: 449 sks Stage 3: 215 sks	773 sks
Tail Cement	-	HalCem	Stage 1: HalCem Stage 2: HalCem	Halcem
Tail Cement Volume	-	86 sks	Stage 1: 287 sks Stage 2: 27 sks	
Cement Excess	100%	100%	100%	50%
TOC	Surface	Surface	Surface	4,140'
Method	Circulate to Surface	Circulate to Surface	Circulate to Surface	Logged

3. Tubing Description

Tubing Information	
OD	5.5"
WT	0.304"
ID	4.892"
Drift ID	4.767
COD	6.050"
Weight	17 lb/ft
Grade	HCL-80 BTC
Depth Set	0-12,080'

Tubing will be lined with Duoline.

4. Packer Description

7-5/8" x 5-1/2" TCPC Permanent Packer with High Temp Elastomer and Full Inconel 925 trim

B. Completion Information

1. Injection Formation: Devonian, Silurian, Fusselman, Montoya (Top 100')

2. Gross Injection Interval: 12,177'-14,000'

Completion Type: Open Hole

3. Drilled for injection.
4. See the attached wellbore schematic.
5. Oil and Gas Bearing Zones within area of well:

Formation	Depth
Delaware	2,390'
Bone Spring	4,431'
Wolfcamp	8,974'
Strawn	10,159'
Atoka	10,422'

#### VI. Area of Review

No wells within the area of review penetrate the proposed injection zone.

#### VII. Proposed Operation Data

1. Proposed Daily Rate of Fluids to be Injection:

Average Volume: 20,000 BPD  
Maximum Volume: 25,000 BPD

2. Closed System
3. Anticipated Injection Pressure:

Average Injection Pressure: 1,827 PSI (surface pressure)  
Maximum Injection Pressure: 2,436 PSI (surface pressure)

4. The injection fluid is to be locally produced water. It is expected that the source water will predominantly be from the Bone Spring and Wolfcamp formations. Attached are produced water sample analyses taken from the closest wells that feature samples from the Delaware, Bone Spring, Wolfcamp, Artesia, Morrow, and Strawn formations.
5. The disposal interval is non-productive. No water samples are available from the surrounding area.

## VIII. Geological Data

### Devonian Formation Lithology:

The Devonian formation is a dolomitic ramp carbonate that occurs below the Woodford shale and above the Fusselman formation. Strata found in the Devonian formation include two major groups, the Wristen Buildups and the Thirtyone Deepwater Chert, with the Wristen being more abundant. The Wristen Groups is composed of mixed limestone and dolomites with mudstone to grainstone and boundstone textures. Porosity in the Wristen group is a result of both primary and secondary development. Present are moldic, vugular, karstic (including collapse breccia) features that allow for higher porosities and permeabilities. The Thirtyone Formation contains two end-member reservoir facies, skeletal packstones/grainstones and spiculitic chert, with most of the porosity and permeability found in the coarsely crystalline cherty dolomite. These particular characteristics allow for this formation to be a tremendous Salt Water Disposal horizon.

### Fusselman Formation Lithology:

The Silurian/Ordovician Fusselman Formation is stratigraphically below the Wristen Group and is above and separated from the Montoya Formation by the Sylvan Shale. The Sylvan Shale is the lower confining layer for the proposed Kodiak SWD No. 1 well. Fusselman facies include a laminated skeletal wackestone in the upper part and a buildup complex in the lower part composed of ooid and bryozoan grainstones. These grainstones can also be potentially prolific zones for disposal.

### Montoya Formation Lithology:

The Montoya Group of Late Ordovician age unconformably overlies the Simpson Group. The Montoya is composed of light gray to medium-dark gray, fine- to medium-crystalline, calcareous dolomite, some units of which are interbedded with shale or dark-gray limestone and some units of which contain white to very light-gray chert. The Montoya carbonate limestone dolomite sequence is dense, impermeable, and non-porous.

#### A. Injection Zone: Siluro-Devonian Formation

Formation	Depth
Salado	364'
Yates	1,002'
Seven Rivers	1,111'
Queen	1,815'
San Andres	2,489'
Delaware	2,930'
Bone Spring	4,431'
Wolfcamp	8,974'
Strawn	10,159'
Atoka	10,422'
Morrow	10,924'
Mississippian Lime	11,629'
Woodford	12,118'
Devonian	12,177'

## **B. Underground Sources of Drinking Water**

Within 1-mile of the proposed Bear Tracker SWD #1 location, there is one water well. The water well has an unknown depth. Water wells in the surrounding area have an average depth of 160 ft and an average water depth of 87 ft.

## **IX. Proposed Stimulation Program**

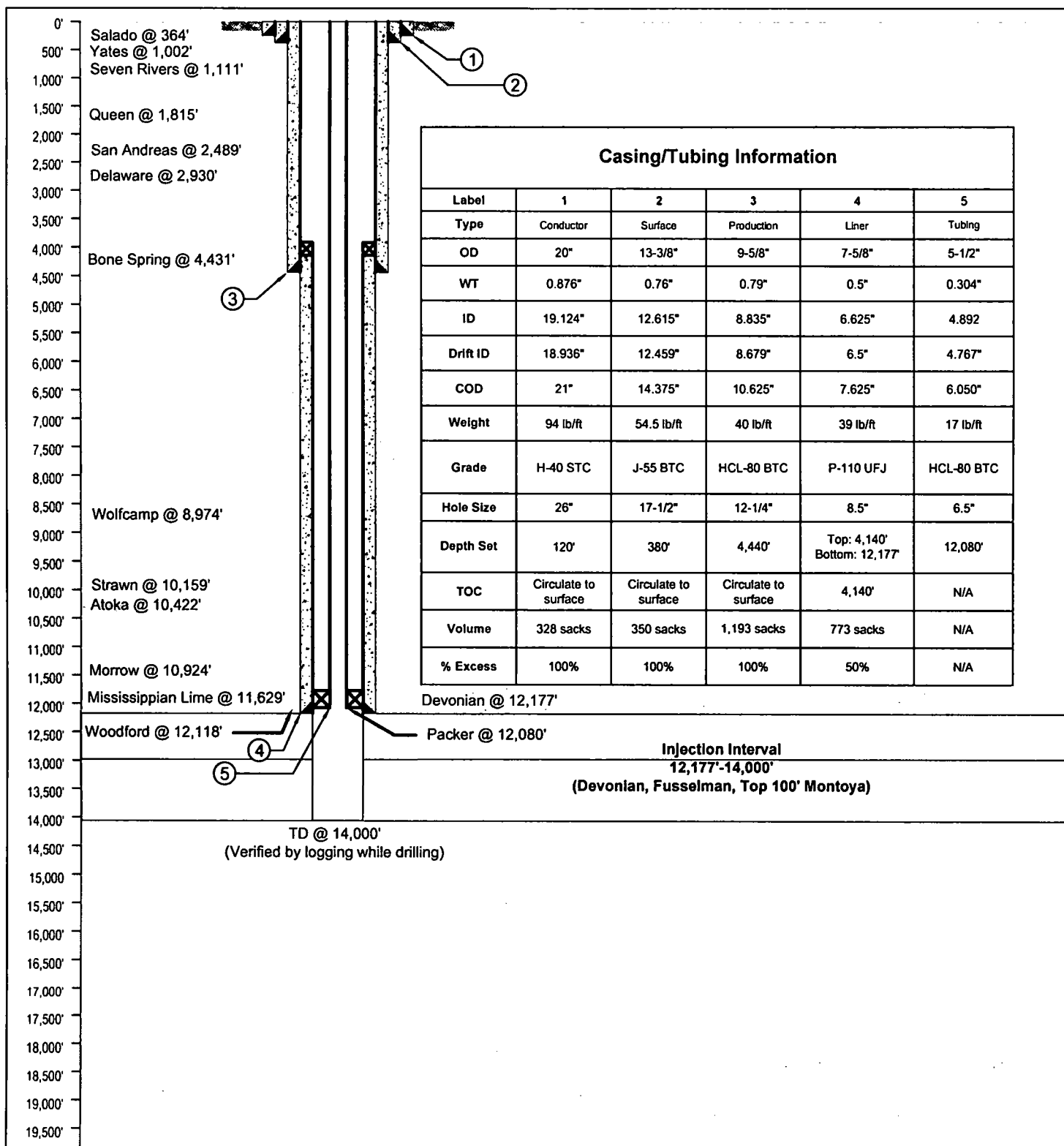
No stimulation program planned.

## **X. Logging and Test Data on the Well**

There are no logs or test data on the well. During the process of drilling and completion resistivity, gamma ray, and density logs will be run.

## **XI. Chemical Analysis of Fresh Water Wells**

Attached is a map of the one (1) water well that exist within one mile of the well location. Samples from the well have been obtained and analysis results will be provided as soon as possible. A Water Right Summary from the New Mexico Office of the State Engineer is attached for water well CP-01231-POD1.



# **LONQUIST & CO. LLC**

**PETROLEUM ENGINEERS** **ENERGY ADVISORS**

HOUSTON, CALGARY, AUSTIN, WICHITA, DENVER

Texas License F-9147

## **3Bear Field Service, LLC**

Country: USA

Location:

API No: NA

NMOCD District No: 1

Drawn: TFM

Rev No: 1

## **Bear Cub SWD No. 1**

State/Province: New Mexico

Site: 1,561 FNL 1,276 FEL

Field: Silurian-Devonian

Project No: 1783

Reviewed:

Notes:

County/Parish: Eddy

Survey: S36-T19S-R28E

Well Type/Status: SWD

Date: 11/8/2018

Approved:

12912 Hill Country Blvd. Ste F-200  
 Austin, Texas 78738  
 Tel: 512.732.9812  
 Fax: 512.732.9816