Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Carlsbad Field Office
OCD Hobbs

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on page 2

5. Lease Serial No.
NMNM0559539

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
JAMES 19 FEDERAL 29H

2. Name of Operator
CIMAREX ENERGY COMPANY OF CO
Contact: TERRI STATHEM
E-Mail: tstathem@cimarex.com

9. API Well No.
30-025-41967-00-X1

3a. Address
202 S CHEYENNE AVE. SUITE 1000
TULSA, OK 74103

3b. Phone No. (include area code)
Ph: 432-620-1936

10. Field and Pool or Exploratory Area
WILDCAT;WOLFCAMP

HOBBS OCD

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 19 T23S R32E NWNE 0330FNL 2310FEL
32.174678 N Lat, 103.424566 W Lon

JUL 20 2018

11. County or Parish, State
LEA COUNTY, NM

RECEIVED

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☒ New Construction	☐ Recomplete	☐ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

Cimarex respectfully requests approval to change the SHL and BHL and new construction for the James 19 Federal 29H well.

New Construction:
Pad Expansion to accommodate additional wells: 500' X 560'
Buried flow line to battery: 760.35'
New off-pad battery has been proposed in an earlier sundry (diagram attached for review).

APD expired
7-11-18
BB

C102:
Approved
SHL: 330' FNL 2310' FEL Sec. 19, 23S, 32E
BHL: 330' FSL 2200' FEL Sec, 19, 23S, 32E

NRS JTS 7-5-18 DOI-BLM-NM-P020-2018-0557-EA

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #392452 verified by the BLM Well Information System
For CIMAREX ENERGY COMPANY OF CO, sent to the Hobbs
Committed to AFMSS for processing by PRISCILLA PEREZ on 11/07/2017 (18PP0216SE)

Name *(Printed/Typed)* TERRI STATHEM — Title MANAGER REGULATORY COMPLIANCE

Signature (Electronic Submission) — Date 10/19/2017

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By Cody Mayfield — Title AFM — Date 07/13/2018

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office CFO

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

Additional data for EC transaction #392452 that would not fit on the form

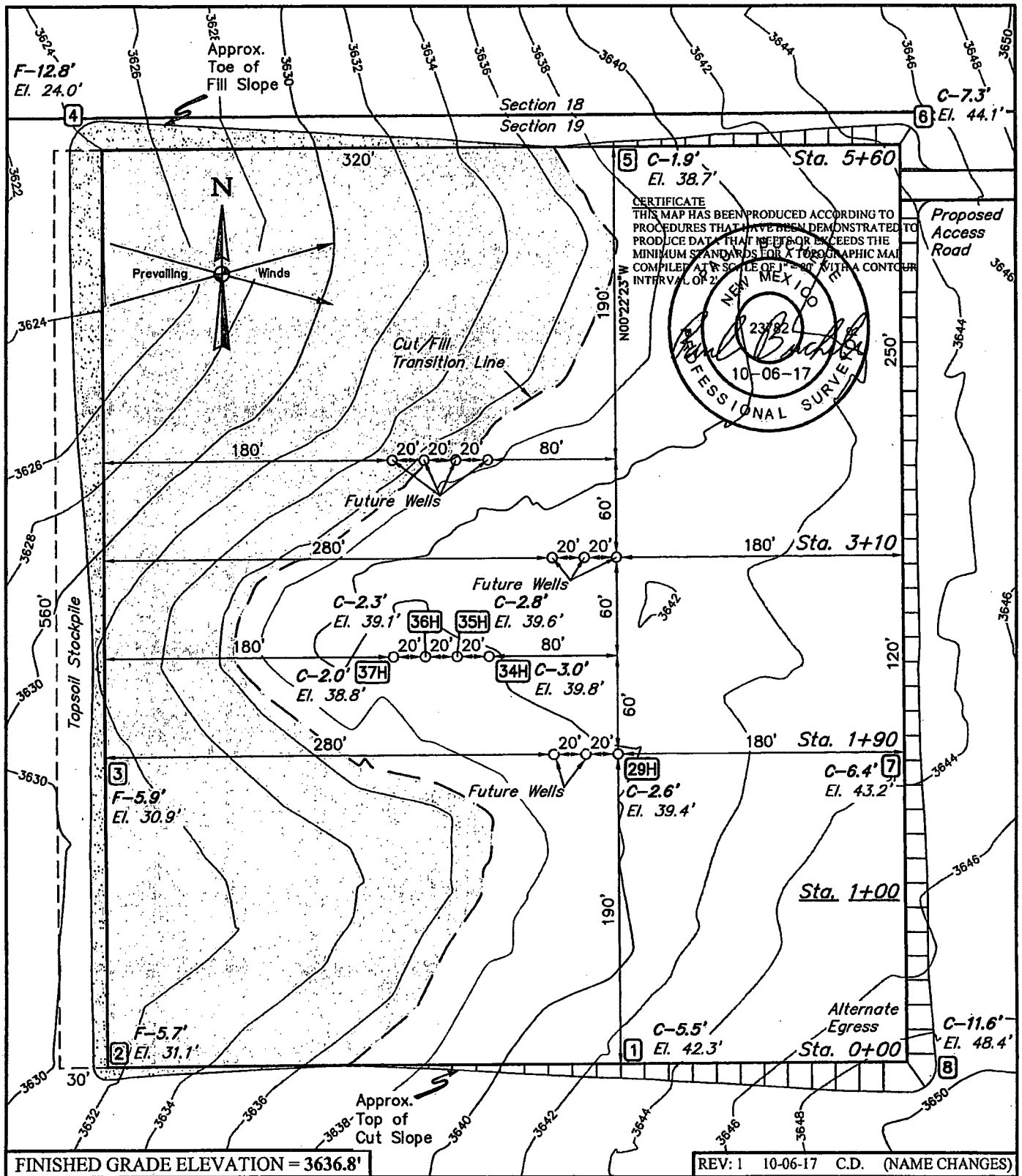
32. Additional remarks, continued

Proposed:
SHL: 390' FNL 2310' FEL Sec. 19, 23S, 32E
BHL: 330' FSL 2280' FEL Sec. 19, 23S, 32E

The proposed SHL & BHL change will also change various drilling plans:
TD: 13700' TVD: 9345'
KOP: 8864' LP: 9623'
Please see attached directional plan.

Please see attached drilling plan for changes to the following:
Production casing setting depth: 13700'
Production casing cement design

Cimarex also requests approval to change the original approved rig layout. The Rig Layout, including V-door and flare line may change depending on rig availability. The pad dimensions and orientation will remain the same. There will be no additional disturbance if a rig layout change is necessary to accommodate the drilling rig.



FINISHED GRADE ELEVATION = **3636.8'**

REV: 1 10-06-17 C.D. (NAME CHANGES)

NOTES:

- Contours shown at 2' intervals.
- Cut/Fill slopes 1 1/2:1 (Typ. except where noted)
- Underground utilities shown on this sheet are for visualization purposes only, actual locations to be determined prior to construction.

CIMAREX ENERGY CO.

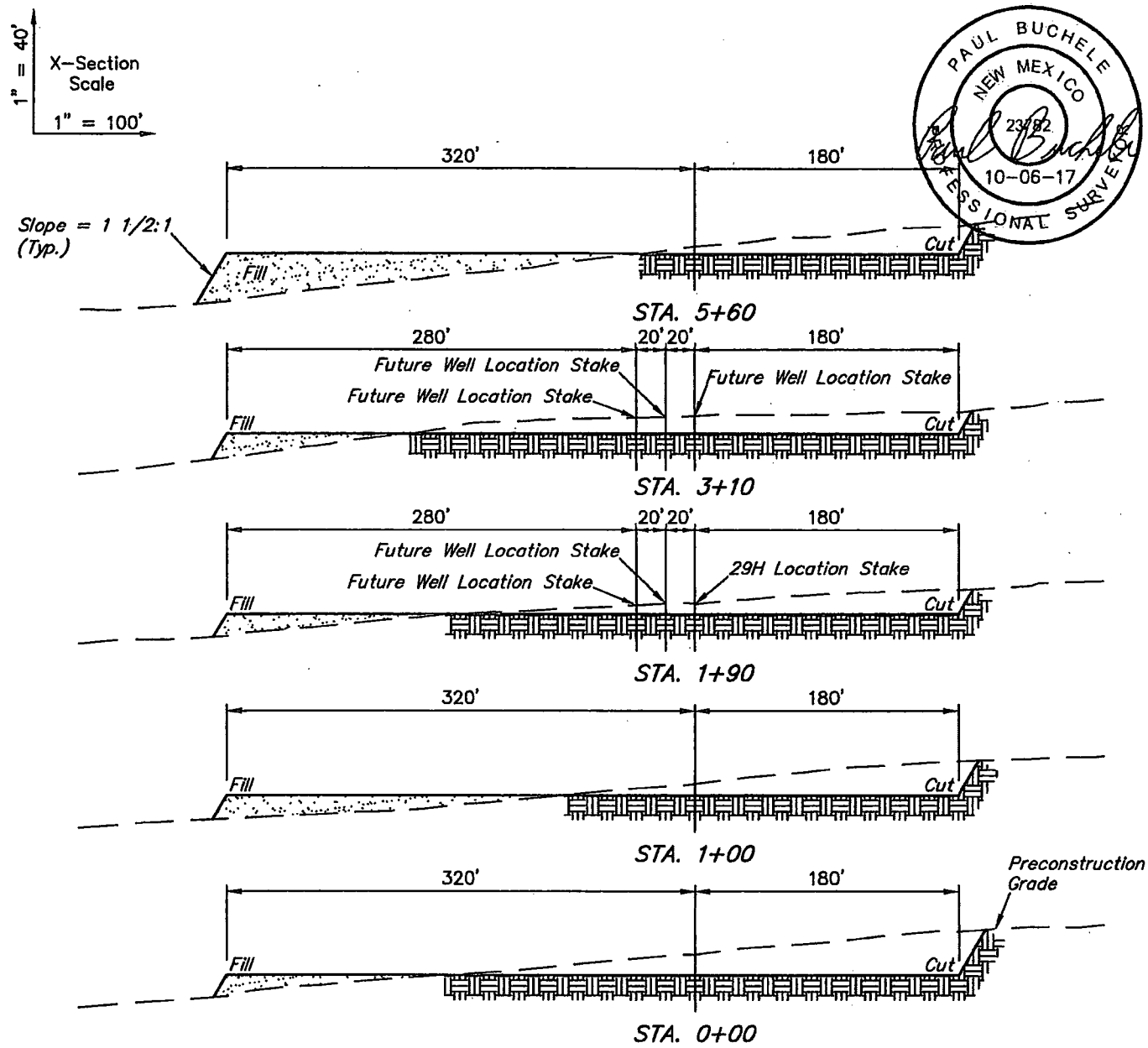
JAMES 19 FEDERAL W2E2
NW 1/4 NE 1/4, SECTION 19, T23S, R32E, N.M.P.M.
LEA COUNTY, NEW MEXICO

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

SURVEYED BY	C.T., J.R.	08-31-17	SCALE
DRAWN BY	S.F.	10-01-17	1" = 80'

LOCATION LAYOUT **EXHIBIT J**



APPROXIMATE EARTHWORK QUANTITIES	
(4") TOPSOIL STRIPPING	3,730 Cu. Yds.
REMAINING LOCATION	24,060 Cu. Yds.
TOTAL CUT	**27,790 Cu. Yds.**
FILL	**24,060 Cu. Yds.**
EXCESS MATERIAL	3,730 Cu. Yds.
TOPSOIL	3,730 Cu. Yds.
EXCESS UNBALANCE (After Interim Rehabilitation)	**0 Cu. Yds.**

APPROXIMATE SURFACE DISTURBANCE AREAS		
	DISTANCE	**ACRES**
WELL SITE DISTURBANCE	NA	±7.155
30' WIDE ROW 1 FLOW LINE R-O-W DISTURBANCE	±398.43'	±0.274
30' WIDE ROW 2 FLOW LINE R-O-W DISTURBANCE	±435.83'	±0.300
30' WIDE ROW 3 FLOW LINE R-O-W DISTURBANCE	±473.52'	±0.326
30' WIDE ROW 4 FLOW LINE R-O-W DISTURBANCE	±760.35'	±0.524
TOTAL SURFACE USE AREA		**±8.579**

REV: 1 10-06-17 C.D. (NAME CHANGES)

NOTES:
- Fill quantity includes 5% for compaction.
- Cut/Fill slopes 1 1/2:1 (Typ. except where noted)

CIMAREX ENERGY CO.

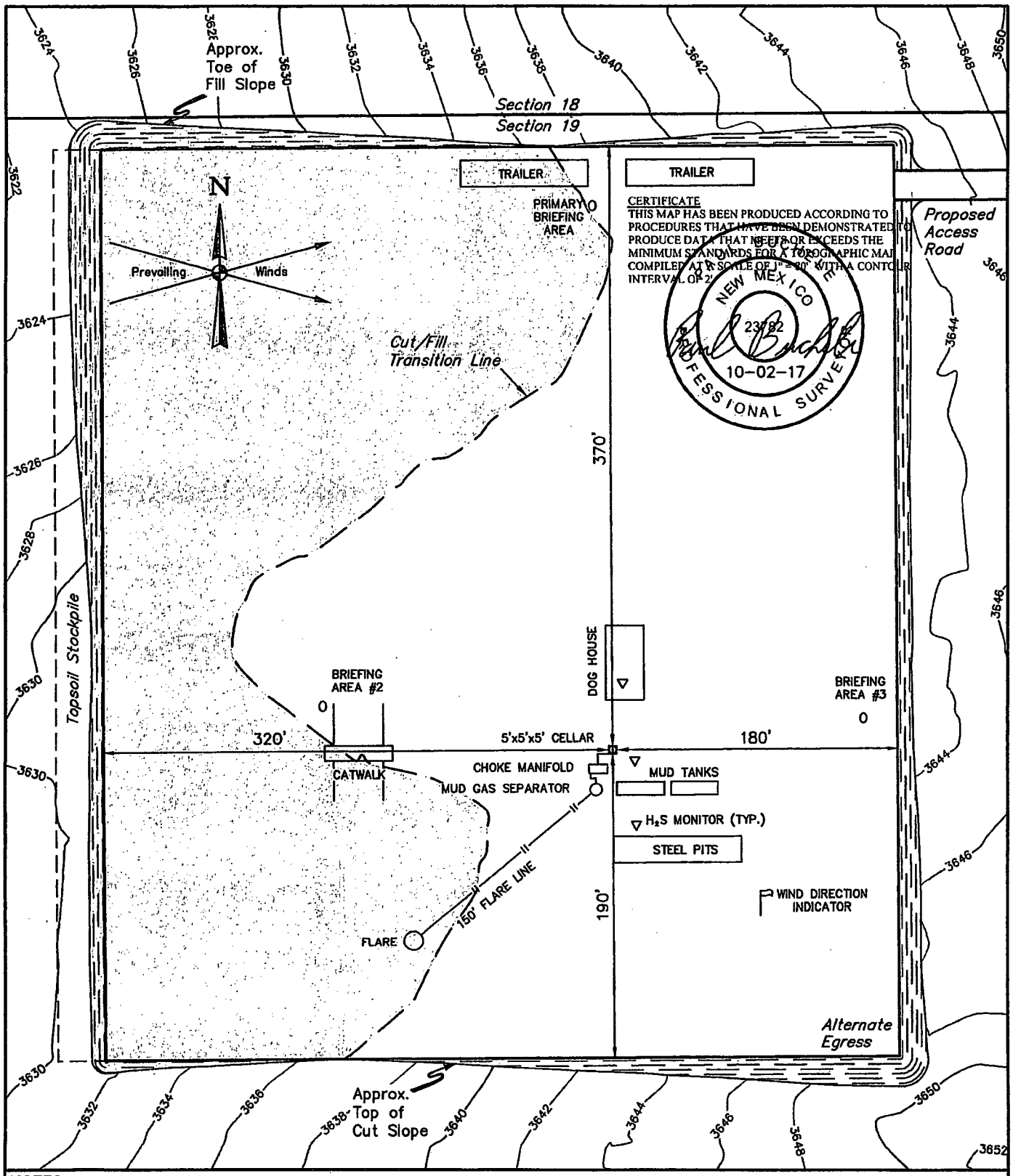
JAMES 19 FEDERAL W2E2
NW 1/4 NE 1/4, SECTION 19, T23S, R32E, N.M.P.M.
LEA COUNTY, NEW MEXICO

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

SURVEYED BY	C.T., J.R.	08-31-17	SCALE
DRAWN BY	S.F.	10-01-17	AS SHOWN

TYPICAL CROSS SECTIONS EXHIBIT J



NOTES:

- Contours shown at 2' intervals.

CIMAREX ENERGY CO.

JAMES 19 FEDERAL 29H
390' FNL 2310' FEL
NW 1/4 NE 1/4, SECTION 19, T23S, R32E, N.M.P.M.
LEA COUNTY, NEW MEXICO

SURVEYED BY	C.T., J.R.	08-31-17	SCALE
DRAWN BY	S.F.	10-01-17	1" = 80'

TYPICAL RIG LAYOUT | **EXHIBIT K**

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
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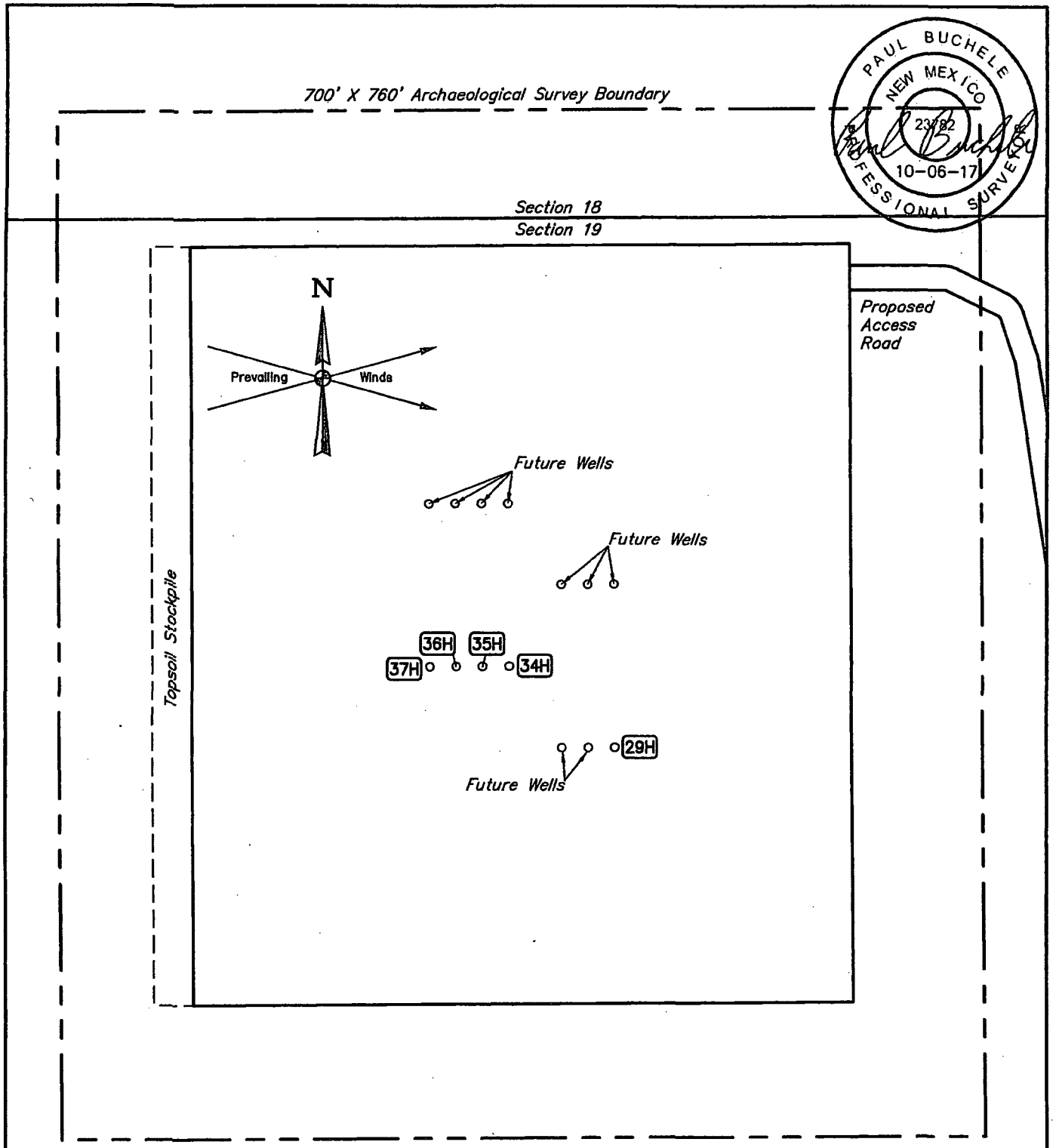
Vernal, UT 84078 * (435) 789-1017



PAUL BUCHELE
NEW MEXICO
23782
10-06-17
PROFESSIONAL SURVEYOR

REV: 1 10-06-17 C.D. (NAME CHANGES)

NOTES:

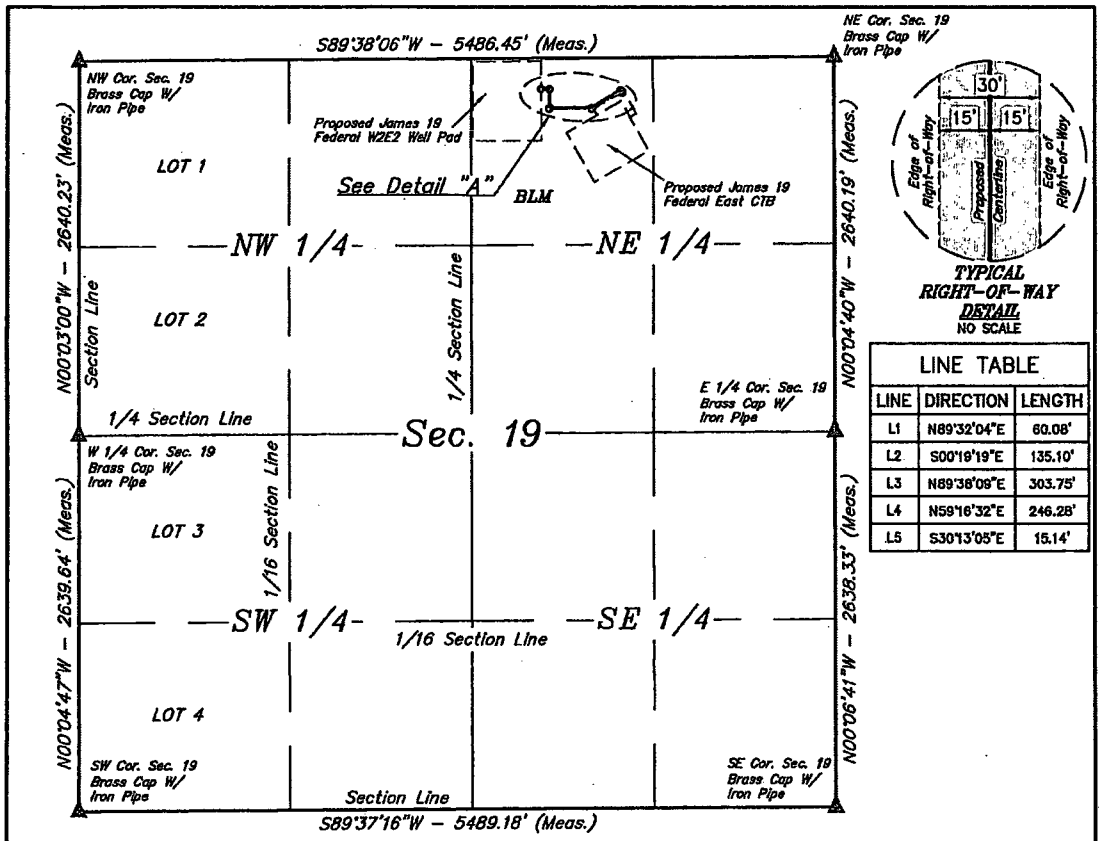
CIMAREX ENERGY CO.

JAMES 19 FEDERAL W2E2
NW 1/4 NE 1/4, SECTION 19, T23S, R32E, N.M.P.M.
LEA COUNTY, NEW MEXICO

SURVEYED BY	C.T., J.R.	08-31-17	SCALE
DRAWN BY	S.F.	10-01-17	1" = 100'
ARCHAEOLOGICAL SURVEY BOUNDARY			EXHIBIT L

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017



TYPICAL RIGHT-OF-WAY DETAIL
NO SCALE

LINE TABLE		
LINE	DIRECTION	LENGTH
L1	N89°32'04"E	60.08'
L2	S00°19'19"E	135.10'
L3	N89°38'09"E	303.75'
L4	N59°16'32"E	246.28'
L5	S30°13'05"E	15.14'

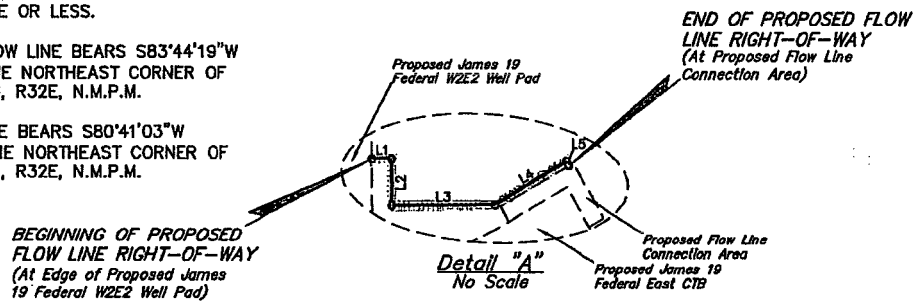
FLOW LINE RIGHT-OF-WAY DESCRIPTION

A 30' WIDE RIGHT-OF-WAY 15' ON EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE.

BEGINNING AT A POINT IN THE NW 1/4 NE 1/4 OF SECTION 19, T23S, R32E, N.M.P.M., WHICH BEARS S83°44'19"W 2143.01' FROM THE NORTHEAST CORNER OF SAID SECTION 19, THENCE N89°32'04"E 60.08'; THENCE S00°19'19"E 135.10'; THENCE N89°38'09"E 303.75'; THENCE N59°16'32"E 246.28'; THENCE S30°13'05"E 15.14' TO A POINT IN THE NW 1/4 NE 1/4 OF SAID SECTION 19, WHICH BEARS S80°41'03"W 1566.98' FROM THE NORTHEAST CORNER OF SAID SECTION 19. THE SIDE LINES OF SAID DESCRIBED RIGHT-OF-WAY BEING SHORTENED OR ELONGATED TO MEET THE GRANTOR'S PROPERTY LINES. BASIS OF BEARINGS IS A TRANSVERSE MERCATOR PROJECTION WITH A CENTRAL MERIDIAN OF W103°53'00". CONTAINS 0.524 ACRES MORE OR LESS.

BEGINNING OF FLOW LINE BEARS S83°44'19"W 2143.01' FROM THE NORTHEAST CORNER OF SECTION 19, T23S, R32E, N.M.P.M.

END OF FLOW LINE BEARS S80°41'03"W 1566.98' FROM THE NORTHEAST CORNER OF SECTION 19, T23S, R32E, N.M.P.M.



1000' 500' 0' 1000'

ACREAGE TABLE				
	OWNERSHIP	FEET	RODS	ACRES
SEC. 19 (NE 1/4)	BLM	760.35	46.08	0.524

▲ = SECTION CORNERS LOCATED.

CERTIFICATE
THIS IS TO CERTIFY THAT THIS EASEMENT PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

23782
09-07-17
PROFESSIONAL SURVEYOR

FILE: 62106-D1

Sheet 1 of 2

NOTES:
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

N

CIMAREX ENERGY CO.

JAMES 19 FEDERAL W2E2 (ROW 4)
SECTION 19, T23S, R32E, N.M.P.M.
LEA COUNTY, NEW MEXICO

SURVEYED BY	A.H., A.G.	08-31-17	SCALE
DRAWN BY	L.W.	09-07-17	1" = 1000'

FLOW LINE R-O-W EXHIBIT M

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

JAMES 19 FEDERAL W2E2 (ROW 4) FLOW LINE			
NUMBER	STATION	LATITUDE (NAD 83)	LONGITUDE (NAD 83)
BEGIN	0+00	N 32°17'47.88"	W 103°42'43.57"
1	0+60.08	N 32°17'47.88"	W 103°42'42.87"
2	1+95.18	N 32°17'46.55"	W 103°42'42.87"
3	4+98.93	N 32°17'46.56"	W 103°42'39.33"
4	7+45.21	N 32°17'47.80"	W 103°42'36.86"
END	7+60.35	N 32°17'47.67"	W 103°42'36.77"

JAMES 19 FEDERAL W2E2			
SECTION CORNER	DESCRIPTION	LATITUDE (NAD 83)	LONGITUDE (NAD 83)
NW COR. SEC. 19, T23S R32E	BRASS CAP W/ IRON PIPE	N 32°17'49.90"	W 103°43'22.66"
NE COR. SEC. 19, T23S R32E	BRASS CAP W/ IRON PIPE	N 32°17'50.16"	W 103°42'18.75"
E 1/4 COR. SEC. 19, T23S R32E	BRASS CAP W/ IRON PIPE	N 32°17'24.04"	W 103°42'18.76"
SE COR. SEC. 19, T23S R32E	BRASS CAP W/ IRON PIPE	N 32°16'57.93"	W 103°42'18.75"
SW COR. SEC. 19, T23S R32E	BRASS CAP W/ IRON PIPE	N 32°16'57.66"	W 103°43'22.68"
W 1/4 COR. SEC. 19, T23S R32E	BRASS CAP W/ IRON PIPE	N 32°17'23.78"	W 103°43'22.68"

CERTIFICATE

THIS IS TO CERTIFY THAT THIS EASEMENT PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

STATE OF NEW MEXICO 23782 PROFESSIONAL SURVEYOR 09-07-17

FILE: 62106-D2

Sheet 2 of 2

NOTES:

CIMAREX ENERGY CO.

JAMES 19 FEDERAL W2E2 (ROW 4)
SECTION 19, T23S, R32E, N.M.P.M.
LEA COUNTY, NEW MEXICO

SURVEYED BY	A.H., A.G.	08-31-17	SCALE
DRAWN BY	L.W.	09-07-17	N/A
FLOW LINE R-O-W		EXHIBIT M	

UINTAH ENGINEERING & LAND SURVEYING

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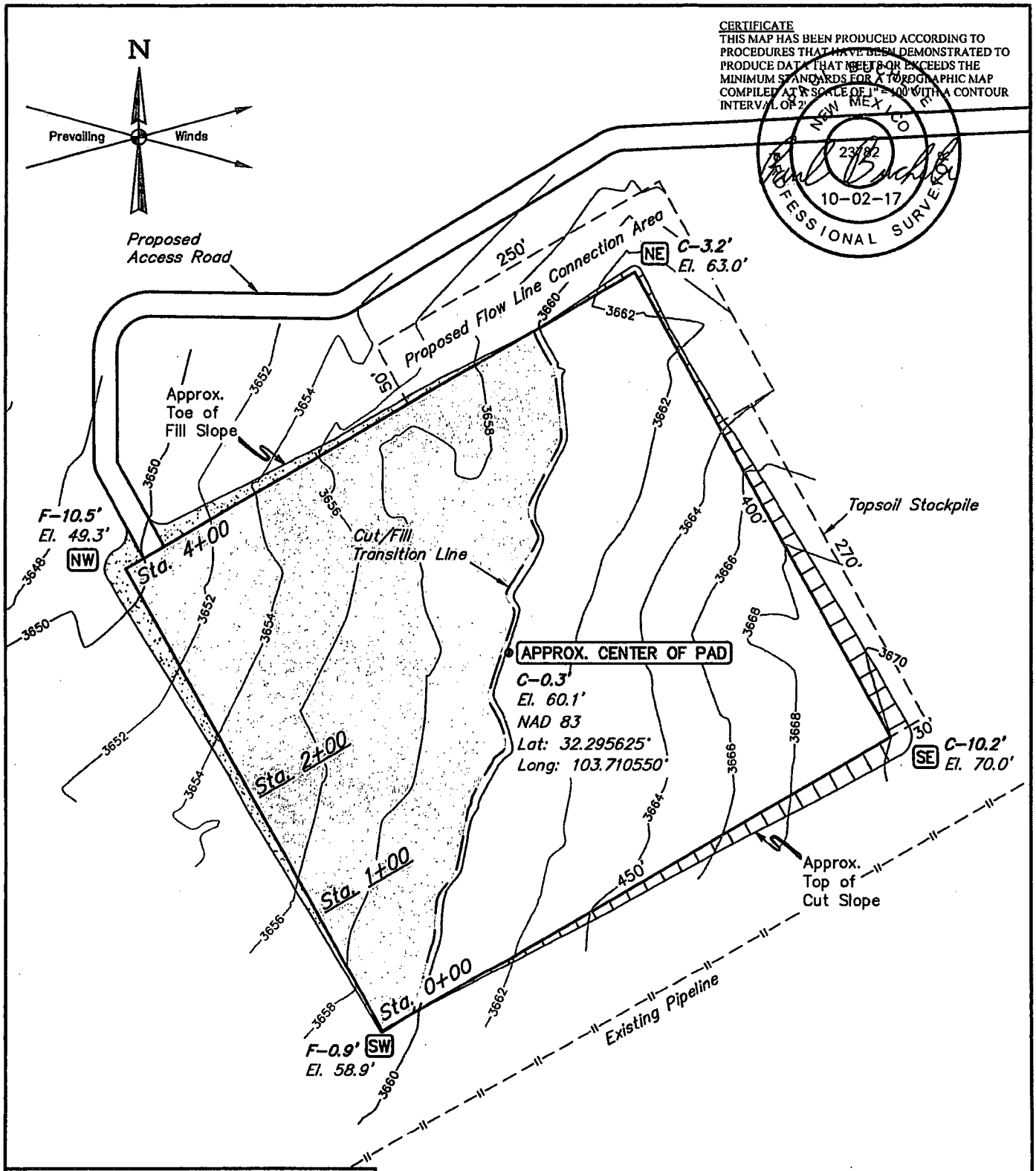
Vernal, UT 84078 * (435) 789-1017



CERTIFICATE
THIS MAP HAS BEEN PRODUCED ACCORDING TO PROCEDURES THAT HAVE BEEN DEMONSTRATED TO PRODUCE DATA THAT MEETS OR EXCEEDS THE MINIMUM STANDARDS FOR A TOPOGRAPHIC MAP COMPILED AT A SCALE OF 1" = 100' WITH A CONTOUR INTERVAL OF 2'.

NEW MEXICO
23782
10-02-17
PROFESSIONAL SURVEYOR

FINISHED GRADE ELEVATION = **3659.8'**

NOTES:

- Contours shown at 2' intervals.
- Cut/Fill slopes 1 1/2:1 (Typ. except where noted)
- Underground utilities shown on this sheet are for visualization purposes only, actual locations to be determined prior to construction.
- Topsoil stockpile to be seeded in place prior to reclamation.

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

CIMAREX ENERGY CO.

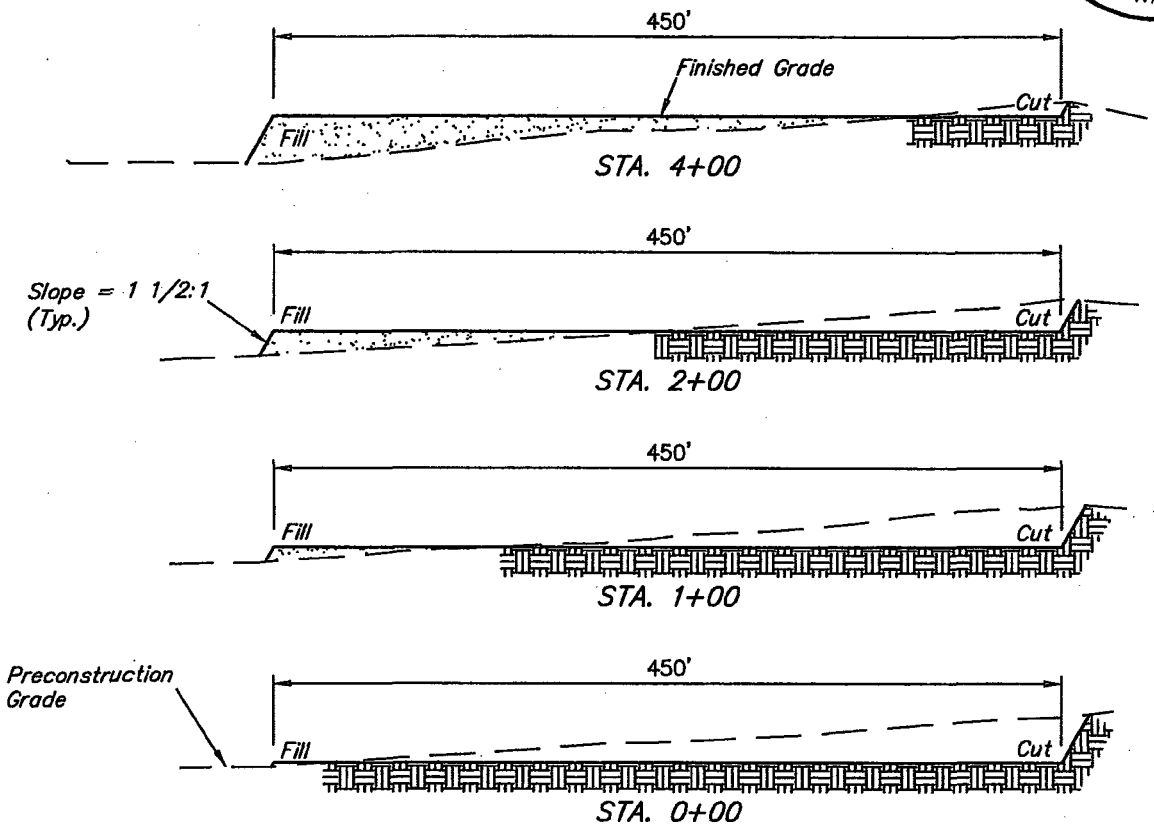
JAMES 19 FEDERAL EAST CTB
NW 1/4 NE 1/4, SECTION 19, T23S, R32E, N.M.P.M.
LEA COUNTY, NEW MEXICO

SURVEYED BY	J.J., R.G.	09-08-17	SCALE
DRAWN BY	S.F.	09-28-17	1" = 100'

LOCATION LAYOUT **EXHIBIT F**

1" = 40'
X-Section Scale
1" = 100'

PAUL BUCHELE
NEW MEXICO
23782
10-02-17
PROFESSIONAL SURVEYOR



APPROXIMATE EARTHWORK QUANTITIES	
(4") TOPSOIL STRIPPING	2,390 Cu. Yds.
REMAINING LOCATION	12,300 Cu. Yds.
TOTAL CUT	**14,690 Cu. Yds.**
FILL	**12,300 Cu. Yds.**
EXCESS MATERIAL	2,390 Cu. Yds.
TOPSOIL	2,390 Cu. Yds.
EXCESS UNBALANCE (After Interim Rehabilitation)	**0 Cu. Yds.**

APPROXIMATE SURFACE DISTURBANCE AREAS		
	DISTANCE	**ACRES**
WELL SITE DISTURBANCE	NA	±4.557
FLOW LINE CONNECTION AREA DISTURBANCE	NA	±0.436
TOTAL SURFACE USE AREA		±4.993

NOTES:
- Fill quantity includes 5% for compaction.
- Cut/Fill slopes 1 1/2:1 (Typ. except where noted)

CIMAREX ENERGY CO.

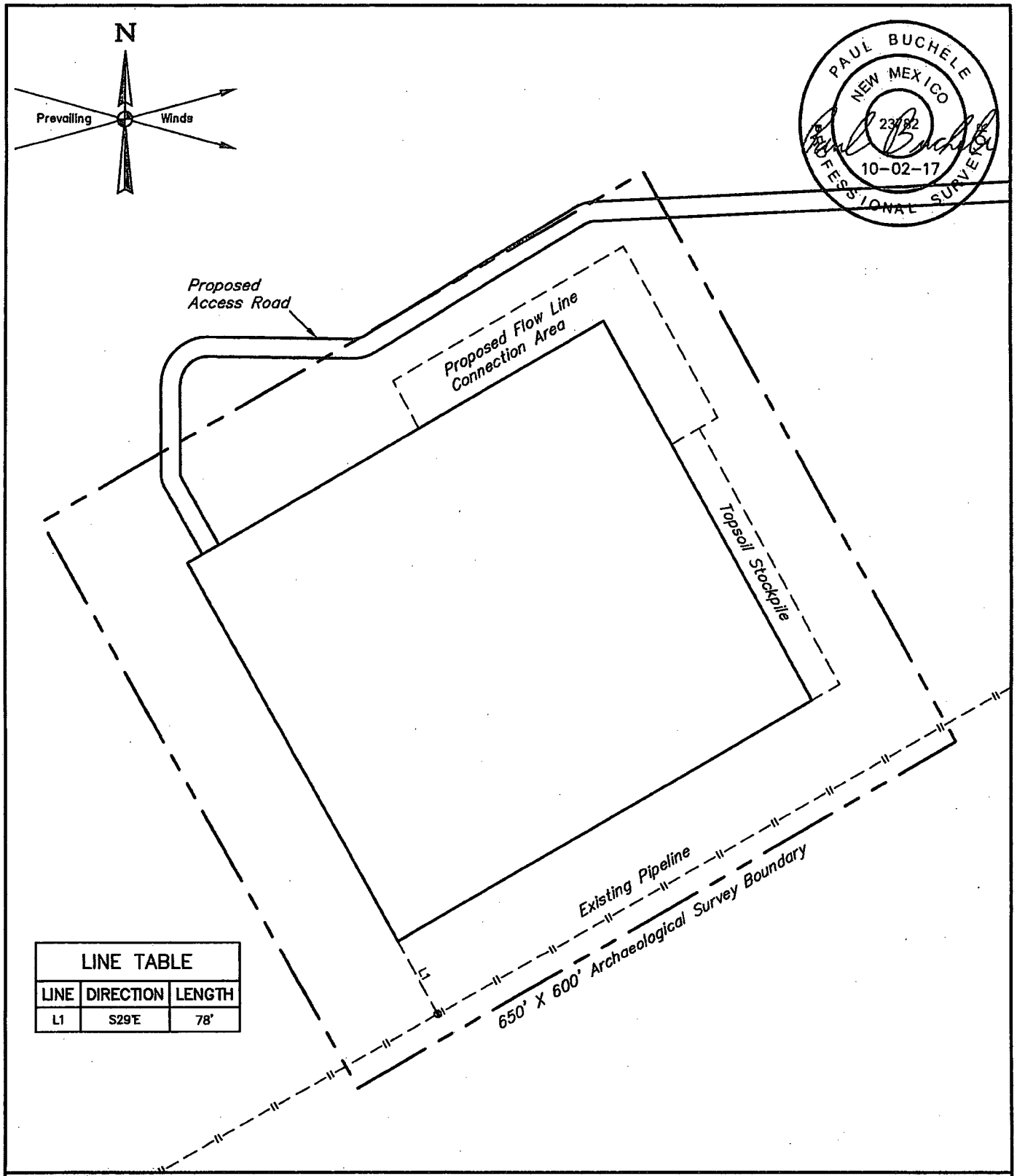
JAMES 19 FEDERAL EAST CTB
NW 1/4 NE 1/4, SECTION 19, T23S, R32E, N.M.P.M.
LEA COUNTY, NEW MEXICO

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

SURVEYED BY	J.J., R.G.	09-08-17	SCALE
DRAWN BY	S.F.	09-28-17	AS SHOWN

TYPICAL CROSS SECTIONS EXHIBIT F



LINE TABLE		
LINE	DIRECTION	LENGTH
L1	S29°E	78'

NOTES:

CIMAREX ENERGY CO.

JAMES 19 FEDERAL EAST CTB
NW 1/4 NE 1/4, SECTION 19, T23S, R32E, N.M.P.M.
LEA COUNTY, NEW MEXICO

SURVEYED BY	J.J., R.G.	09-08-17	SCALE
DRAWN BY	S.F.	09-28-17	1" = 120'
ARCHAEOLOGICAL SURVEY BOUNDARY			EXHIBIT F

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
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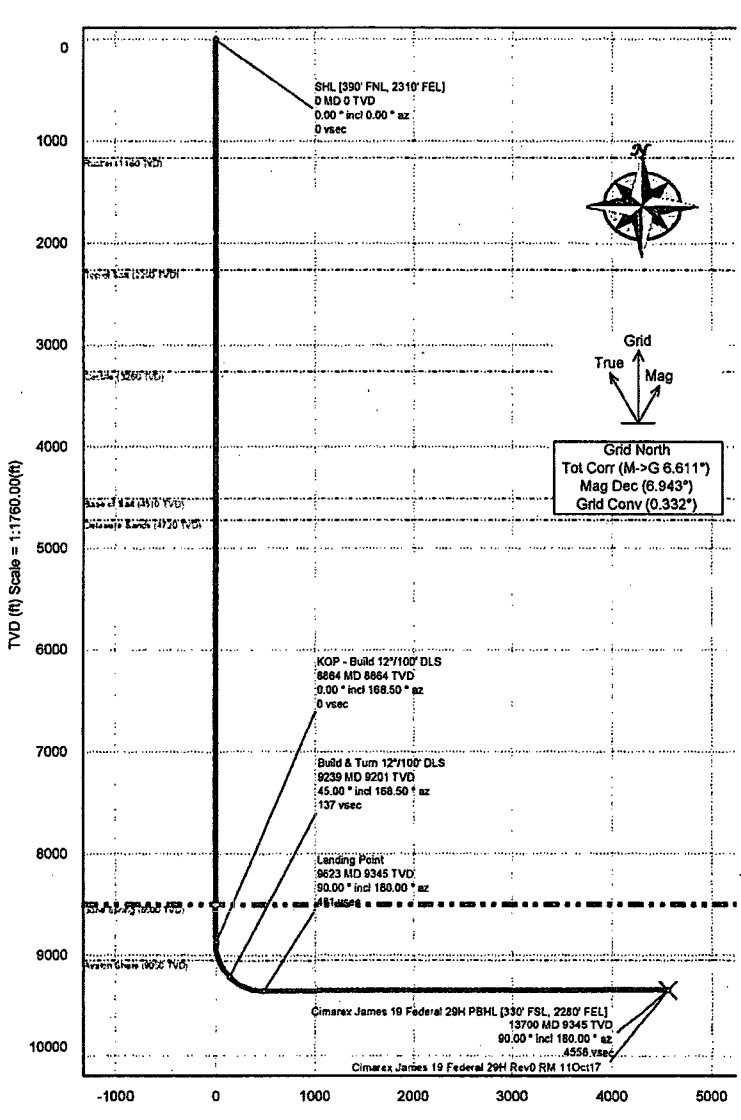
Schlumberger

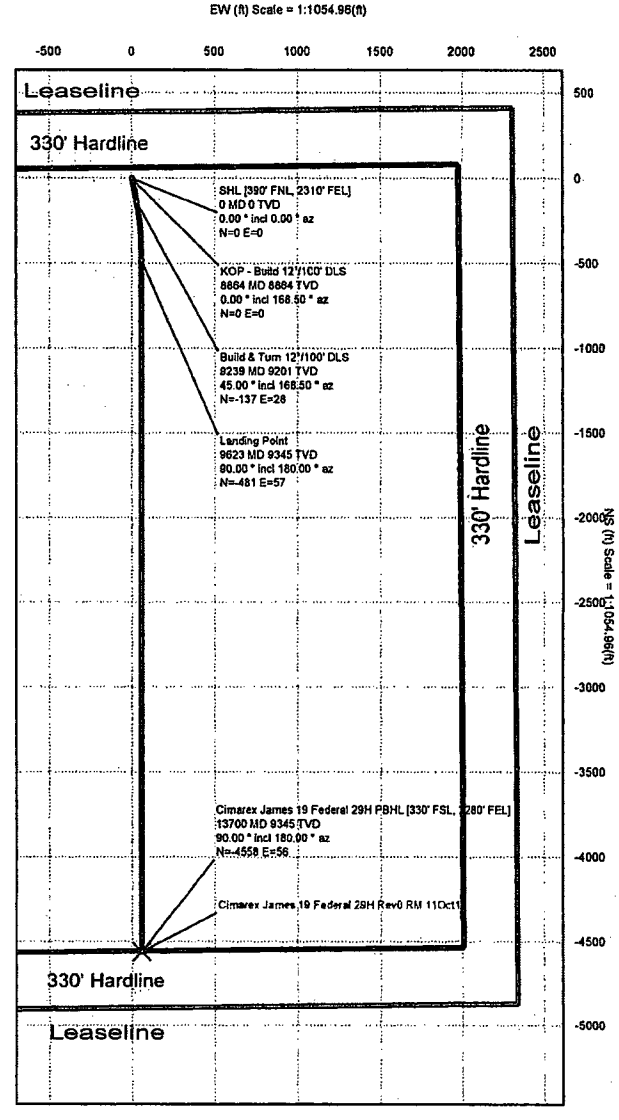
Cimarex Rev 0

CIMAREX

Borehole:	Well:	Field:	Structure:
Original Borehole	Cimarex James 19 Federal 29H	NM Lea County (NAD 83)	Cimarex James 19 Federal 29H

Gravity & Magnetic Parameters						Surface Location	NAD83 New Mexico State Plane, Eastern Zone, US Feet					Miscellaneous			
Model:	HDGM 2017	Dip:	60.074°	Date:	11-Oct-2017	Lat:	N 32 17 46.18	Northing:	472031.62ftUS	Grid Conv:	0.3316°	Slot:	Cimarex James 19 Federal 29H	TVD Ref:	RKB(3683.4ft above MSL)
MagDec:	6.943°	FS:	48147.882nT	Gravity FS:	999.438mgn (9.80665 Based)	Lon:	W 103 42 45.66	Easting:	733112.62ftUS	Scale Fact:	0.99995121	Plan:	Cimarex James 19 Federal 29H Rev0 RM 11Oct17		





Vertical Section (ft) Azim = 180.00° Scale = 1:1760.00(ft) Origin = 0N/-S, 0E/-W

Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [390' FNL, 2310' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rustler	1160.00	0.00	168.50	1160.00	0.00	0.00	0.00	0.00
Top of Salt	2260.00	0.00	168.50	2260.00	0.00	0.00	0.00	0.00
Castille	3260.00	0.00	168.50	3260.00	0.00	0.00	0.00	0.00
Base of Salt	4510.00	0.00	168.50	4510.00	0.00	0.00	0.00	0.00
Delaware Sands	4720.00	0.00	168.50	4720.00	0.00	0.00	0.00	0.00
Bone Spring	8500.00	0.00	168.50	8500.00	0.00	0.00	0.00	0.00
KOP - Build 12°/100' DLS	8863.58	0.00	168.50	8863.58	0.00	0.00	0.00	0.00
Avalon Shale	9055.09	22.98	168.50	9050.00	37.14	-37.14	7.56	12.00
Build & Turn 12°/100' DLS	9238.58	45.00	168.50	9201.20	137.04	-137.04	27.88	12.00
Landing Point	9623.08	90.00	180.00	9345.00	481.31	-481.31	56.54	12.00
Cimarex James 19 Federal 29H PBHL [330' FSL, 2280' FEL]	13699.69	90.00	180.00	9345.00	4557.92	-4557.92	56.28	0.00
1st Bone Spring Sand	NaN			9650.00				

Schlumberger

CIMAREX

Cimarex James 19 Federal 29H Rev0 RM 11Oct17 Proposal Geodetic Report

(Non-Def Plan)

Report Date:	October 11, 2017 - 01:42 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	Cimarex	**Vertical Section Azimuth:**	180.000 ° (Grid North)
Field:	NM Lea County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Cimarex James 19 Federal 29H / Cimarex James 19 Federal 29H	**TVD Reference Datum:**	RKB
Well:	Cimarex James 19 Federal 29H	**TVD Reference Elevation:**	3663.400 ft above MSL
Borehole:	Original Borehole	**Seabed / Ground Elevation:**	3639.400 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	6.943 °
Survey Name:	Cimarex James 19 Federal 29H Rev0 RM 11Oct17	**Total Gravity Field Strength:**	998.4381mgn (9.80665 Based)
Survey Date:	October 11, 2017	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	91.140 ° / 4562.442 ft / 5.785 / 0.488	**Total Magnetic Field Strength:**	48147.682 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	60.074 °
Location Lat / Long:	N 32° 17' 46.18919", W 103° 42' 45.65529"	**Declination Date:**	October 11, 2017
Location Grid N/E Y/X:	N 472031.920 ftUS, E 733112.620 ftUS	**Magnetic Declination Model:**	HDGM 2017
CRS Grid Convergence Angle:	0.3316 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99995121	**Grid Convergence Used:**	0.3316 °
Version / Patch:	2.10.544.0	**Total Corr Mag North->Grid North:**	6.6113 °
		Local Coord Referenced To:	Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL [390' FNL, 2310' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
KOP - Build 12°/100' DLS	8863.58	0.00	168.50	8863.58	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
Build & Turn 12°/100' DLS	9238.58	45.00	168.50	9201.20	137.04	-137.04	27.86	12.00	471894.89	733140.50	N 32 17 44.83	W 103 42 45.34
Landing Point	9623.08	90.00	180.00	9345.00	481.31	-481.31	56.54	12.00	471550.64	733169.15	N 32 17 41.42	W 103 42 45.03
Cimarex James 19 Federal 29H PBHL [330' FSL, 2280' FEL]	13699.69	90.00	180.00	9345.00	4557.92	-4557.92	56.28	0.00	467474.23	733168.90	N 32 17 1.09	W 103 42 45.31

Survey Type: Non-Def Plan

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma

Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	24.000	1/100.000	30.000	30.000		NAL_MWD_PLUS_0.5_DEG-Depth Only	Original Borehole / Cimarex James 19 Federal 29H Rev0 RM 11Oct17
	1	24.000	13699.691	1/100.000	30.000	30.000		NAL_MWD_PLUS_0.5_DEG	Original Borehole / Cimarex James 19 Federal 29H Rev0 RM

Schlumberger

CIMAREX

Cimarex James 19 Federal 29H Rev0 RM 11Oct17 Proposal Geodetic Report

(Non-Def Plan)

Report Date:	October 11, 2017 - 01:41 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	Cimarex	**Vertical Section Azimuth:**	180.000 ° (Grid North)
Field:	NM Lea County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Cimarex James 19 Federal 29H / Cimarex James 19 Federal 29H	**TVD Reference Datum:**	RKB
Well:	Cimarex James 19 Federal 29H	**TVD Reference Elevation:**	3663.400 ft above MSL
Borehole:	Original Borehole	**Seabed / Ground Elevation:**	3639.400 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	6.943 °
Survey Name:	Cimarex James 19 Federal 29H Rev0 RM 11Oct17	**Total Gravity Field Strength:**	998.4381mgn (9.80665 Based)
Survey Date:	October 11, 2017	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	91.140 ° / 4562.442 ft / 5.785 / 0.488	**Total Magnetic Field Strength:**	48147.682 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	60.074 °
Location Lat / Long:	N 32° 17' 46.18919", W 103° 42' 45.65529"	**Declination Date:**	October 11, 2017
Location Grid N/E Y/X:	N 472031.920 ftUS, E 733112.620 ftUS	**Magnetic Declination Model:**	HDGM 2017
CRS Grid Convergence Angle:	0.3316 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99995121	**Grid Convergence Used:**	0.3316 °
Version / Patch:	2.10.544.0	**Total Corr Mag North->Grid North:**	6.6113 °
		Local Coord Referenced To:	Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL [390' FNL, 2310' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	100.00	0.00	168.50	100.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	200.00	0.00	168.50	200.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	300.00	0.00	168.50	300.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	400.00	0.00	168.50	400.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	500.00	0.00	168.50	500.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	600.00	0.00	168.50	600.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	700.00	0.00	168.50	700.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	800.00	0.00	168.50	800.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	900.00	0.00	168.50	900.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	1000.00	0.00	168.50	1000.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	1100.00	0.00	168.50	1100.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
Rustler	*1160.00*	*0.00*	*168.50*	*1160.00*	*0.00*	*0.00*	*0.00*	*0.00*	*472031.92*	*733112.62*	*N 32 17 46.19*	*W 103 42 45.66*
	1200.00	0.00	168.50	1200.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	1300.00	0.00	168.50	1300.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	1400.00	0.00	168.50	1400.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	1500.00	0.00	168.50	1500.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	1600.00	0.00	168.50	1600.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	1700.00	0.00	168.50	1700.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	1800.00	0.00	168.50	1800.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	1900.00	0.00	168.50	1900.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	2000.00	0.00	168.50	2000.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	2100.00	0.00	168.50	2100.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	2200.00	0.00	168.50	2200.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
Top of Salt	*2260.00*	*0.00*	*168.50*	*2260.00*	*0.00*	*0.00*	*0.00*	*0.00*	*472031.92*	*733112.62*	*N 32 17 46.19*	*W 103 42 45.66*
	2300.00	0.00	168.50	2300.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	2400.00	0.00	168.50	2400.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	2500.00	0.00	168.50	2500.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	2600.00	0.00	168.50	2600.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	2700.00	0.00	168.50	2700.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	2800.00	0.00	168.50	2800.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	2900.00	0.00	168.50	2900.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	3000.00	0.00	168.50	3000.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	3100.00	0.00	168.50	3100.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	3200.00	0.00	168.50	3200.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
Castille	*3260.00*	*0.00*	*168.50*	*3260.00*	*0.00*	*0.00*	*0.00*	*0.00*	*472031.92*	*733112.62*	*N 32 17 46.19*	*W 103 42 45.66*
	3300.00	0.00	168.50	3300.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	3400.00	0.00	168.50	3400.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	3500.00	0.00	168.50	3500.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	3600.00	0.00	168.50	3600.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	3700.00	0.00	168.50	3700.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	3800.00	0.00	168.50	3800.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	3900.00	0.00	168.50	3900.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	4000.00	0.00	168.50	4000.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	4100.00	0.00	168.50	4100.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	4200.00	0.00	168.50	4200.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	4300.00	0.00	168.50	4300.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	4400.00	0.00	168.50	4400.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	4500.00	0.00	168.50	4500.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
Base of Salt	*4510.00*	*0.00*	*168.50*	*4510.00*	*0.00*	*0.00*	*0.00*	*0.00*	*472031.92*	*733112.62*	*N 32 17 46.19*	*W 103 42 45.66*
	4600.00	0.00	168.50	4600.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	4700.00	0.00	168.50	4700.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
Delaware Sands	*4720.00*	*0.00*	*168.50*	*4720.00*	*0.00*	*0.00*	*0.00*	*0.00*	*472031.92*	*733112.62*	*N 32 17 46.19*	*W 103 42 45.66*
	4800.00	0.00	168.50	4800.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	4900.00	0.00	168.50	4900.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	5000.00	0.00	168.50	5000.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	5100.00	0.00	168.50	5100.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	5200.00	0.00	168.50	5200.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	5300.00	0.00	168.50	5300.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	5400.00	0.00	168.50	5400.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	5500.00	0.00	168.50	5500.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	5600.00	0.00	168.50	5600.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	5700.00	0.00	168.50	5700.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	5800.00	0.00	168.50	5800.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	5900.00	0.00	168.50	5900.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	6000.00	0.00	168.50	6000.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	6100.00	0.00	168.50	6100.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	6200.00	0.00	168.50	6200.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	6300.00	0.00	168.50	6300.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	6400.00	0.00	168.50	6400.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	6500.00	0.00	168.50	6500.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	6600.00	0.00	168.50	6600.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	6700.00	0.00	168.50	6700.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	6800.00	0.00	168.50	6800.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	6900.00	0.00	168.50	6900.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	7000.00	0.00	168.50	7000.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	7100.00	0.00	168.50	7100.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	7200.00	0.00	168.50	7200.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	7300.00	0.00	168.50	7300.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	7400.00	0.00	168.50	7400.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	7500.00	0.00	168.50	7500.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	7600.00	0.00	168.50	7600.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	7700.00	0.00	168.50	7700.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	7800.00	0.00	168.50	7800.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	7900.00	0.00	168.50	7900.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	8000.00	0.00	168.50	8000.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	8100.00	0.00	168.50	8100.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	8200.00	0.00	168.50	8200.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	8300.00	0.00	168.50	8300.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	8400.00	0.00	168.50	8400.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
Bone Spring	8500.00	0.00	168.50	8500.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	8600.00	0.00	168.50	8600.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	8700.00	0.00	168.50	8700.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	8800.00	0.00	168.50	8800.00	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
KOP - Build 12°/100' DLS	8863.58	0.00	168.50	8863.58	0.00	0.00	0.00	0.00	472031.92	733112.62	N 32 17 46.19	W 103 42 45.66
	8900.00	4.37	168.50	8899.96	1.36	-1.36	0.28	12.00	472030.56	733112.90	N 32 17 46.18	W 103 42 45.65
	9000.00	16.37	168.50	8998.15	18.97	-18.97	3.86	12.00	472012.95	733116.48	N 32 17 46.00	W 103 42 45.61
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	9100.00	28.37	168.50	9090.46	56.20	-56.20	11.43	12.00	471975.73	733124.05	N 32 17 45.63	W 103 42 45.53
	9200.00	40.37	168.50	9172.85	111.41	-111.41	22.67	12.00	471920.51	733135.29	N 32 17 45.09	W 103 42 45.40
Build & Turn 12°/100' DLS	9238.58	45.00	168.50	9201.20	137.04	-137.04	27.88	12.00	471894.89	733140.50	N 32 17 44.83	W 103 42 45.34
	9300.00	52.11	171.08	9241.83	182.32	-182.32	35.98	12.00	471849.60	733148.60	N 32 17 44.38	W 103 42 45.25
	9400.00	63.79	174.37	9294.81	266.26	-266.26	46.54	12.00	471765.66	733159.16	N 32 17 43.55	W 103 42 45.13
	9500.00	75.52	177.05	9329.52	359.59	-359.59	53.46	12.00	471672.35	733166.08	N 32 17 42.63	W 103 42 45.06
	9600.00	87.28	179.46	9344.45	458.24	-458.24	56.43	12.00	471573.70	733169.05	N 32 17 41.65	W 103 42 45.03
Landing Point	9623.08	90.00	180.00	9345.00	481.31	-481.31	56.54	12.00	471550.64	733169.15	N 32 17 41.42	W 103 42 45.03
	9700.00	90.00	180.00	9345.00	558.23	-558.23	56.53	0.00	471473.72	733169.15	N 32 17 40.66	W 103 42 45.03
	9800.00	90.00	180.00	9345.00	658.23	-658.23	56.53	0.00	471373.72	733169.14	N 32 17 39.67	W 103 42 45.04
	9900.00	90.00	180.00	9345.00	758.23	-758.23	56.52	0.00	471273.73	733169.14	N 32 17 38.68	W 103 42 45.05
	10000.00	90.00	180.00	9345.00	858.23	-858.23	56.51	0.00	471173.73	733169.13	N 32 17 37.69	W 103 42 45.05
	10100.00	90.00	180.00	9345.00	958.23	-958.23	56.51	0.00	471073.74	733169.12	N 32 17 36.70	W 103 42 45.06
	10200.00	90.00	180.00	9345.00	1058.23	-1058.23	56.50	0.00	470973.74	733169.12	N 32 17 35.71	W 103 42 45.07
	10300.00	90.00	180.00	9345.00	1158.23	-1158.23	56.49	0.00	470873.75	733169.11	N 32 17 34.73	W 103 42 45.08
	10400.00	90.00	180.00	9345.00	1258.23	-1258.23	56.49	0.00	470773.75	733169.11	N 32 17 33.74	W 103 42 45.08
	10500.00	90.00	180.00	9345.00	1358.23	-1358.23	56.48	0.00	470673.76	733169.10	N 32 17 32.75	W 103 42 45.09
	10600.00	90.00	180.00	9345.00	1458.23	-1458.23	56.48	0.00	470573.76	733169.09	N 32 17 31.76	W 103 42 45.10
	10700.00	90.00	180.00	9345.00	1558.23	-1558.23	56.47	0.00	470473.77	733169.09	N 32 17 30.77	W 103 42 45.10
	10800.00	90.00	180.00	9345.00	1658.23	-1658.23	56.46	0.00	470373.77	733169.08	N 32 17 29.78	W 103 42 45.11
	10900.00	90.00	180.00	9345.00	1758.23	-1758.23	56.46	0.00	470273.78	733169.07	N 32 17 28.79	W 103 42 45.12
	11000.00	90.00	180.00	9345.00	1858.23	-1858.23	56.45	0.00	470173.78	733169.07	N 32 17 27.80	W 103 42 45.12
	11100.00	90.00	180.00	9345.00	1958.23	-1958.23	56.44	0.00	470073.79	733169.06	N 32 17 26.81	W 103 42 45.13
	11200.00	90.00	180.00	9345.00	2058.23	-2058.23	56.44	0.00	469973.79	733169.06	N 32 17 25.82	W 103 42 45.14
	11300.00	90.00	180.00	9345.00	2158.23	-2158.23	56.43	0.00	469873.80	733169.05	N 32 17 24.83	W 103 42 45.14
	11400.00	90.00	180.00	9345.00	2258.23	-2258.23	56.43	0.00	469773.80	733169.04	N 32 17 23.84	W 103 42 45.15
	11500.00	90.00	180.00	9345.00	2358.23	-2358.23	56.42	0.00	469673.81	733169.04	N 32 17 22.85	W 103 42 45.16
	11600.00	90.00	180.00	9345.00	2458.23	-2458.23	56.41	0.00	469573.81	733169.03	N 32 17 21.86	W 103 42 45.16
	11700.00	90.00	180.00	9345.00	2558.23	-2558.23	56.41	0.00	469473.82	733169.02	N 32 17 20.87	W 103 42 45.17
	11800.00	90.00	180.00	9345.00	2658.23	-2658.23	56.40	0.00	469373.82	733169.02	N 32 17 19.88	W 103 42 45.18
	11900.00	90.00	180.00	9345.00	2758.23	-2758.23	56.39	0.00	469273.83	733169.01	N 32 17 18.89	W 103 42 45.18
	12000.00	90.00	180.00	9345.00	2858.23	-2858.23	56.39	0.00	469173.83	733169.01	N 32 17 17.90	W 103 42 45.19
	12100.00	90.00	180.00	9345.00	2958.23	-2958.23	56.38	0.00	469073.84	733169.00	N 32 17 16.91	W 103 42 45.20
	12200.00	90.00	180.00	9345.00	3058.23	-3058.23	56.38	0.00	468973.85	733168.99	N 32 17 15.93	W 103 42 45.20
	12300.00	90.00	180.00	9345.00	3158.23	-3158.23	56.37	0.00	468873.85	733168.99	N 32 17 14.94	W 103 42 45.21
	12400.00	90.00	180.00	9345.00	3258.23	-3258.23	56.36	0.00	468773.86	733168.98	N 32 17 13.95	W 103 42 45.22
	12500.00	90.00	180.00	9345.00	3358.23	-3358.23	56.36	0.00	468673.86	733168.97	N 32 17 12.96	W 103 42 45.23
	12600.00	90.00	180.00	9345.00	3458.23	-3458.23	56.35	0.00	468573.87	733168.97	N 32 17 11.97	W 103 42 45.23
	12700.00	90.00	180.00	9345.00	3558.23	-3558.23	56.35	0.00	468473.87	733168.96	N 32 17 10.98	W 103 42 45.24
	12800.00	90.00	180.00	9345.00	3658.23	-3658.23	56.34	0.00	468373.88	733168.96	N 32 17 9.99	W 103 42 45.25
	12900.00	90.00	180.00	9345.00	3758.23	-3758.23	56.33	0.00	468273.88	733168.95	N 32 17 9.00	W 103 42 45.25
	13000.00	90.00	180.00	9345.00	3858.23	-3858.23	56.33	0.00	468173.89	733168.94	N 32 17 8.01	W 103 42 45.26
	13100.00	90.00	180.00	9345.00	3958.23	-3958.23	56.32	0.00	468073.89	733168.94	N 32 17 7.02	W 103 42 45.27
	13200.00	90.00	180.00	9345.00	4058.23	-4058.23	56.31	0.00	467973.90	733168.93	N 32 17 6.03	W 103 42 45.27
	13300.00	90.00	180.00	9345.00	4158.23	-4158.23	56.31	0.00	467873.90	733168.92	N 32 17 5.04	W 103 42 45.28
	13400.00	90.00	180.00	9345.00	4258.23	-4258.23	56.30	0.00	467773.91	733168.92	N 32 17 4.05	W 103 42 45.29
	13500.00	90.00	180.00	9345.00	4358.23	-4358.23	56.30	0.00	467673.91	733168.91	N 32 17 3.06	W 103 42 45.29
	13600.00	90.00	180.00	9345.00	4458.23	-4458.23	56.29	0.00	467573.92	733168.91	N 32 17 2.07	W 103 42 45.30
Cimarex James 19 Federal 29H PBHL [330' FSL, 2280' FEL]	13699.69	90.00	180.00	9345.00	4557.92	-4557.92	56.28	0.00	467474.23	733168.90	N 32 17 1.09	W 103 42 45.31

Survey Type: Non-Def Plan

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma

Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	24.000	1/100.000	30.000	30.000		NAL_MWD_PLUS_0.5_DEG-Depth Only	Original Borehole / Cimarex James 19 Federal 29H Rev0 RM 11Oct17
	1	24.000	13699.691	1/100.000	30.000	30.000		NAL_MWD_PLUS_0.5_DEG	Original Borehole / Cimarex James 19 Federal 29H Rev0 RM

1. Geological Formations

TVD of target 9,345 Pilot Hole TD N/A
MD at TD 13,700 Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
OSE Groundwater	350	N/A	
Rustler	1160	N/A	
Salt	2300	N/A	
Castille	3260	N/A	
Base Last Salt	4510	N/A	
Lamar	4760	N/A	
Bell Canyon	4805	N/A	
Cherry Canyon	5630	N/A	
Brushy Canyon	6960	N/A	
Basal Brushy Canyon	8100	N/A	
Bone Spring	8500	Hydrocarbons	
Avalon Shale	9100	Hydrocarbons	

2. Casing Program

Hole Size	Casing Depth From	Casing Depth To	Casing Size	Weight (lb/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17 1/2	0	1150	13-3/8"	48.00	H-40	ST&C	1.49	3.49	5.83
12 1/4	0	4650	9-5/8"	36.00	J-55	LT&C	1.25	1.46	2.71
8 3/4	0	8863	5-1/2"	17.00	L-80	LT&C	1.48	1.83	2.13
8 3/4	8863	13700	5-1/2"	17.00	L-80	BT&C	1.41	1.73	48.45
				BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet

TVD was used on all calculations.
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	Y
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	N
Is well within the designated 4 string boundary.	N
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	N
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	N
Is 2nd string set 100' to 600' below the base of salt?	N
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	N
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	N
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	N

3. Cementing Program

Casing	# Sks	Wt. lb/gal	Yld ft3/sack	H2O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	557	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	149	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate	873	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	272	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Production	225	9.20	6.18	28.80		Lead: Class C + Extender + Salt + Strength Enhancement + LCM + Fluid Loss + Retarder
	1035	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS

Casing String	TOC	% Excess
Surface	0	45
Intermediate	0	44
Production	4450	17

4. Pressure Control Equipment

	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.

BOP installed and tested before drilling which hole?	Size	Min. Required WP	Type		Tested To
12 1/4	13 5/8	2M	Annular	X	50% of working pressure
			Blind Ram		2M
			Pipe Ram	X	
			Double Ram	X	
			Other		
8 3/4	13 5/8	3M	Annular	X	50% of working pressure
			Blind Ram		3M
			Pipe Ram	X	
			Double Ram	X	
			Other		

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.	
X	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.	
	N	Are anchors required by manufacturer?

5. Mud Program

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0' to 1150'	FW Spud Mud	7.80 - 8.30	30-32	N/C
1150' to 4650'	Brine Water	9.50 - 10.00	30-32	N/C
4650' to 13700'	FW/Cut Brine	8.70 - 9.20	30-32	N/C

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring

6. Logging and Testing Procedures

	Logging, Coring and Testing
X	Will run GR/CNL fromTD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No logs are planned based on well control or offset log information.
	Drill stem test?
	Coring?

Additional Logs Planned	Interval

7. Drilling Conditions

Condition	
BH Pressure at deepest TVD	4470 psi
Abnormal Temperature	No

	Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.
X	H2S is present
X	H2S plan is attached

8. Other Facets of Operation

9. Wellhead

A multi-bowl wellhead system will be utilized.

After running the 13-3/8" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 3000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 3000 psi test. Annular will be tested to 50% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2.

The multi-bowl wellhead will be installed by vendor's representative. A copy of the installation instructions has been sent to the BLM field office.

The wellhead will be installed by a third-party welder while being monitored by the wellhead vendor representative.

All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type.

A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 3000 psi.

The surface casing string will be tested as per Onshore Order No. 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater.

The casing string utilizing steel body pack-off will be tested to 70% of casing burst.

If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements.