

Appendix A – Location Maps

Hawk 9 G Federal 23 Well



Figure 1. Looking north along west edge of proposed Hawk 9 G Federal 23 well pad, flow lines, and proposed power line corridor.



Figure 2. Looking northeast across proposed Hawk 9 G Federal 23 well pad.

Lime Rock Resources II-A, L.P.
Hawk 9 G Federal 23
1720' FNL & 1720' FEL
Sec. 9, T. 18 S., R. 27 E.
Eddy County, NM

SURFACE PLAN PAGE 1

Surface Use Plan

1. ROAD DIRECTIONS & DESCRIPTIONS (See MAPS 1-4)

From the center of Artesia...

Go East 9.3 miles on US 82 to the equivalent of Mile Post 116.8

Then turn right and go South 1/4 mile on paved County Road 204

Then turn right and go Southwest 2.1 miles on paved County Road 225

Then bear right and go Southwest 2.1 miles on County Road 227

Then turn left and go South 0.35 mile on a caliche road

Then turn left and go East 0.17 mile on a caliche road to a 4-way junction

Then turn right and go South 878' on a caliche road

Then turn left and go East 16' cross country to the pad

Non-county roads will be maintained as needed to Gold Book standards. This includes pulling ditches, preserving the crown, and cleaning culverts. This will occur at least once a year, and more often as needed. Caliche will be hauled from Lime Rock's approved (HA-0258-0000) caliche pit on State land in NESE 36-17s-27e. Access to the lease will be via road right-of-way NMNM-133704.

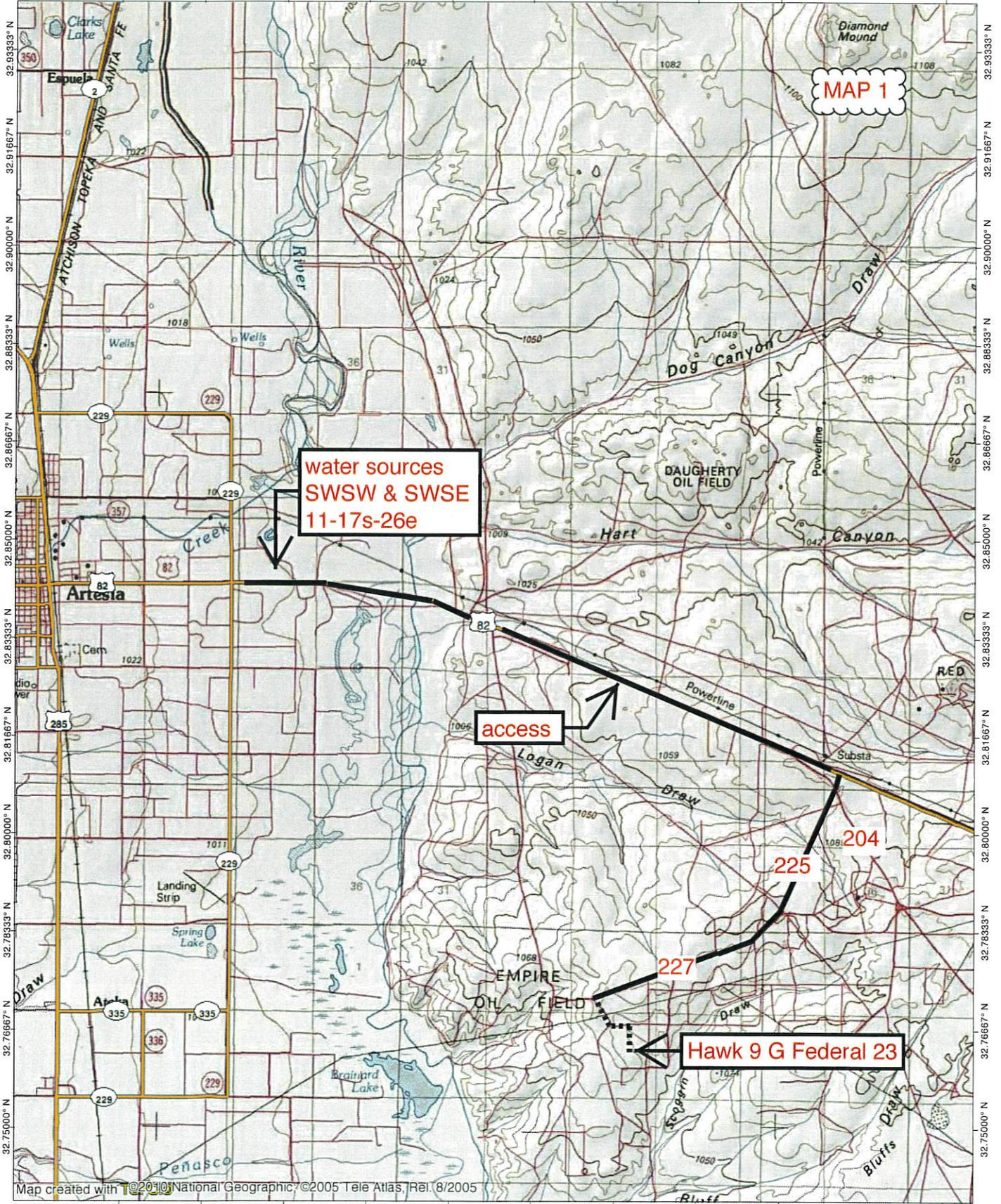
2. ROAD TO BE BUILT OR UPGRADED (See MAPS 3 & 4)

The 16' of new road will be crowned, have a 14' wide driving surface, and be surfaced with caliche. Maximum disturbed width = 20'. Maximum grade = 4%. Maximum cut or fill = 5'. No upgrade, culvert, cattle guard, or vehicle turn out is needed.

3. EXISTING WELLS (See MAP 2)

Existing water, oil, gas, injection, and P & A wells are within a mile. There are no disposal wells within a mile radius.

104.38333° W 104.36667° W 104.35000° W 104.33333° W 104.31667° W 104.30000° W 104.28333° W 104.26667° W 104.25000° W WGS84 104.21667° W



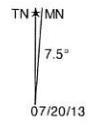
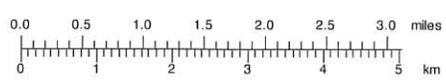
MAP 1

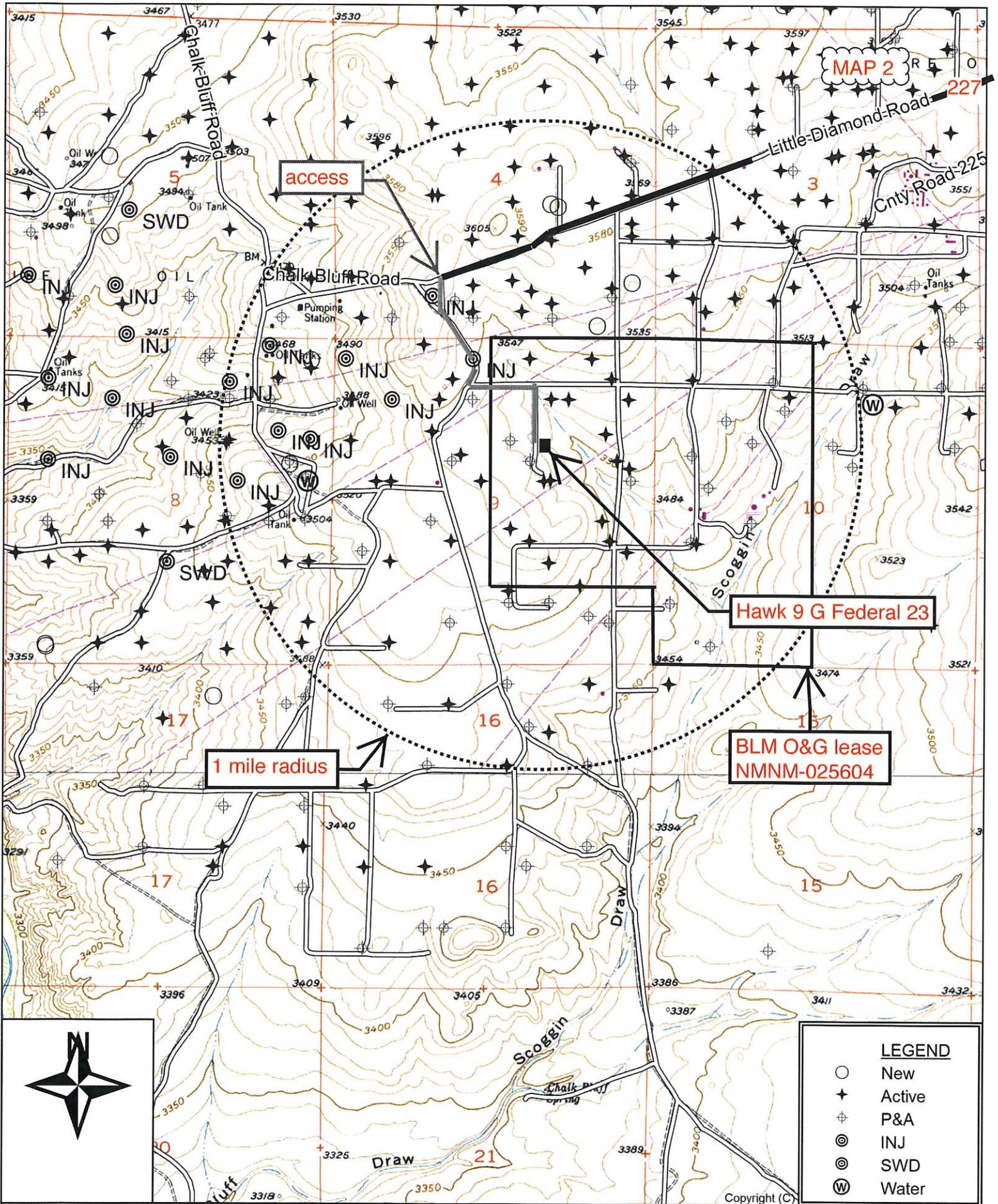
water sources
SWSW & SWSE
11-17s-26e

access

Hawk 9 G Federal 23

Map created with ©2010 National Geographic, ©2005 Tele Atlas, Rel. 8/2005





Quad: SPRING LAKE
 Scale: 1 inch = 2,000 ft.

Copyright (C)



843.63' proposed power line

3567.85' proposed pipelines

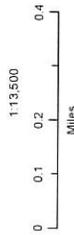
Hawk
9 G
Federal
23

MAP 3
1000 ft

Google earth
© 2016 Google



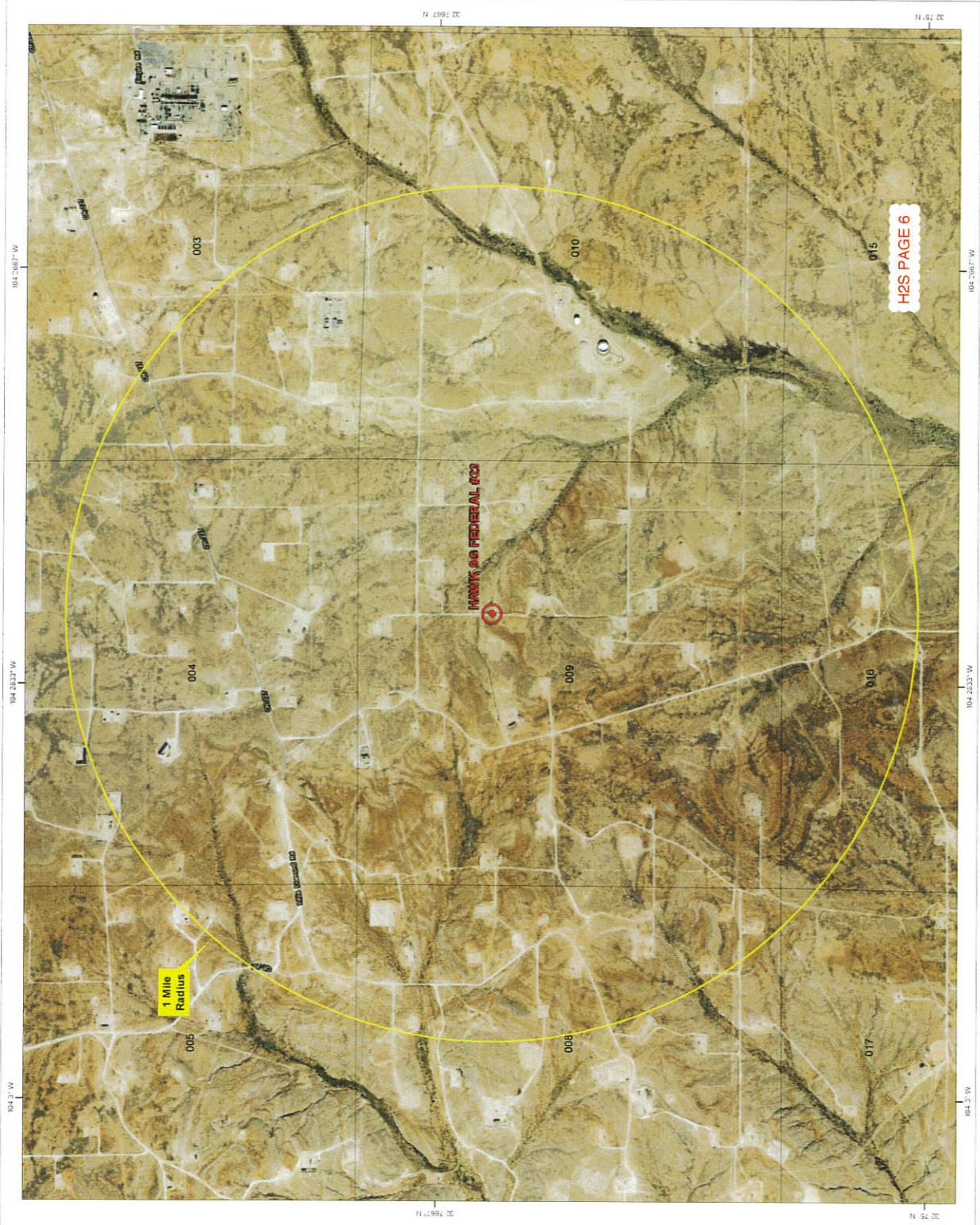
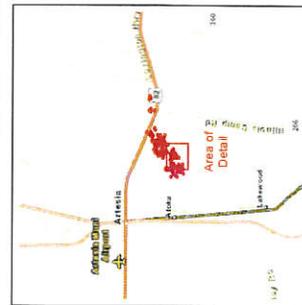
Hawk 9G Federal #23
H2S Contingency Plan:
1 Mile Radius Map
Section 9, Township 18S, Range 27E
Eddy County, New Mexico



NAD 1927 New Mexico State Plane East
FIPS 3001 Feet

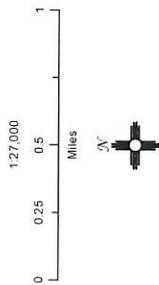


Prepared by Permit West, Inc., January 26, 2016
for Lime Rock Resources LLC, L.P.





Hawk 9G Federal #23
H2S Contingency Plan:
2 Mile Radius Map
Section 9, Township 18S, Range 27E
Eddy County, New Mexico



NAD 1927 New Mexico State Plane East
FPS 3001 Feet



Prepared by Ferrets West, Inc., January 26, 2016
for Lime Rock Resources II-A, L.P.

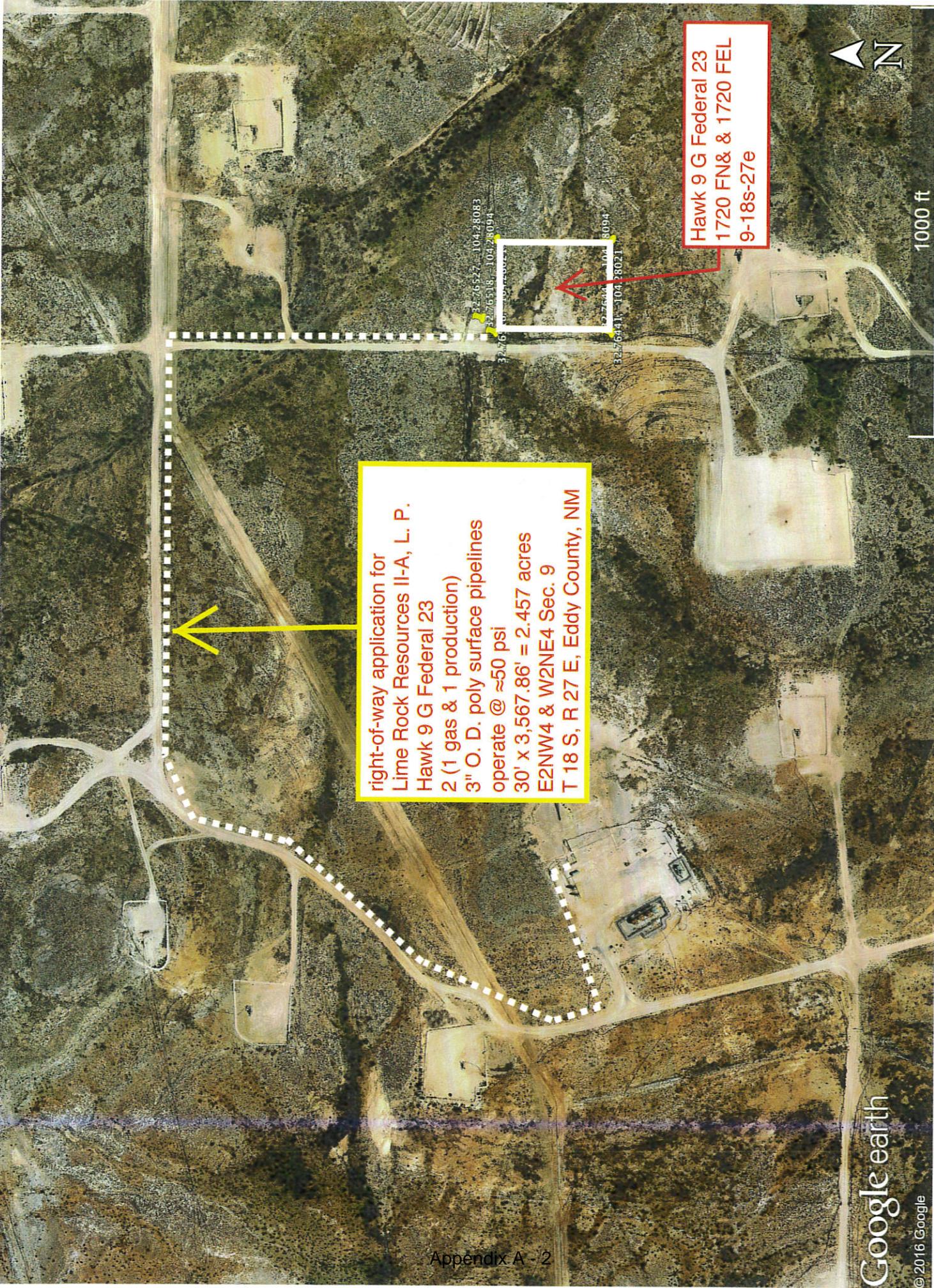


H2S PAGE 7

Pipeline Right-of-way



Looking North from NW corner of Hawk 9 G Federal 23 pad



right-of-way application for
Lime Rock Resources II-A, L. P.
Hawk 9 G Federal 23
2 (1 gas & 1 production)
3" O. D. poly surface pipelines
operate @ ~50 psi
30' x 3,567.86' = 2.457 acres
E2NW4 & W2NE4 Sec. 9
T 18 S, R 27 E, Eddy County, NM

Hawk 9 G Federal 23
1720 FN& & 1720 FEL
9-18s-27e

1000 ft



**PLAN OF DEVELOPMENT FOR LIME ROCK'S
HAWK 9 G FEDERAL 23 PIPELINES**

7. a. Lime Rock Resources II-A, L. P. plans to lay two 3,567.86' long ≈ 3 " O. D. SDR-7 poly pipelines (one flow line and one gas line). The routes tie into an existing battery in SENW 9-18s-27e. The pipelines will be laid on the surface. The entire project is in Section 9, T. 18 S., R. 27 E., Eddy County, NM.

b. Valves will be installed at each end. No other surface facilities will be needed.

c. Total corridor length will be 3,567.86 feet. Right-of-way width will be 30'. Total acreage will be 2.457 acres. Project steps are:

- Centerline has been staked. Boone conducted a BLM records search on February 16, 2016. Due to multiple previous surveys, and in consultation with BLM archaeologist Stay Galassini, it was determined no further survey was needed.

- All persons associated with project will be informed that they are subject to prosecution for disturbing paleontology, fossils, historic and prehistoric archaeology sites, or for collecting any artifact; including fossils, arrowheads, and pot shards. If such materials are uncovered during construction, work that may further damage such materials is to immediately stop, and BLM will be called.

- All private or public survey corners, monuments, reference points, benchmarks, etc. will be avoided.

- All vehicle traffic will be confined to the right-of-way, existing roads, and well pads. The pipeline route will not be used as a road after reclamation except for repairs or emergencies.

- Lay, connect, and pressure test pipes. Typical operating will be ≈ 50 psi. Maximum operating pressure will be < 125 psi. Test pressure will be ≈ 250 psi.

- Right-of-way will be kept clean. Waste will be disposed of at a state approved landfill. All stakes will be removed once reclamation is done.

- No toxic (e.g., mercury, PCBs) substances will be used, stored, generated, or released on the facilities.

d. Request term of 30 years.

e. Will use pipelines year round.

f. Estimated throughput will be ≈ 75 Mcfd, ≈ 75 bopd, and ≈ 200 bwpd.

g. Construction will begin upon approval and be completed in 1 day.

h. If any extra space is needed, Lime Rock's existing well pads will be used.

13 a. One option is to lay the pipelines cross-country. This option would be $\approx 2,200'$ shorter.

b. This option, while less expensive, was rejected because it would disperse development.

c. Must cross Federal land because the well is on Federal surface.

14. Pertinent authorizations include the pending APD dated April 23, 2016.

15. Estimated cost is \$36,000. Cross-country would cost \$23,000 less. Construction will increase tax base.

16. There are no houses within a mile of the project. Socioeconomic benefit from improving field economics and resulting employment, purchase of goods and services, payment of royalties and taxes, reduction of trade deficit, and associated multipliers.

17. a. Dust will be raised during the 1 day of construction.

b. Black poly pipelines will be laid parallel to other existing pipelines.

c. No impact to water quality or quantity.

d. There will be no impact to the control or structure of any water body since no perennial water is crossed.

e. There will be a slight temporary (1 day) increase in noise during construction. There will be no additional noise during operation.

f. Vegetation will be trampled. No permafrost or unstable soil present.

18. a. Tiny fauna will find shelter under the pipelines. Flora will change from shrub to grass. No T & E species will be affected.

b. No marine life is present.

19. None

Appendix B – Plats

Hawk 9 G Federal 23 Well

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

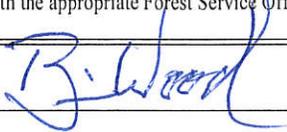
5. Lease Serial No. NMNM-025604	
6. If Indian, Allottee or Tribe Name N/A	
7. If Unit or CA Agreement, Name and No. N/A	
8. Lease Name and Well No. HAWK 9 G FEDERAL 23	
9. API Well No. 30-015-	
10. Field and Pool, or Exploratory RED LAKE; GLORIETA-YESO	
11. Sec., T. R. M. or Blk. and Survey or Area SWNE 9-18S-27E	
12. County or Parish EDDY	13. State NM

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER	
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone	
2. Name of Operator LIME ROCK RESOURCES II-A, L. P.	
3a. Address 1111 BAGBY ST., SUITE 4600 HOUSTON, TX 77002	3b. Phone No. (include area code) 713 292-9528
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface 1720' FNL & 1720' FEL At proposed prod. zone same	
14. Distance in miles and direction from nearest town or post office* 8 AIR MILES SE OF ARTESIA, NM	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 920'	16. No. of acres in lease 640
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 367' (EAU 701)	19. Proposed Depth 5,200'
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3,518.1' UNGRADED	22. Approximate date work will start* 07/01/2016
23. Estimated duration 1 MONTH	

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

- | | |
|--|---|
| 1. Well plat certified by a registered surveyor. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the BLM. |

25. Signature 	Name (Printed Typed) BRIAN WOOD (PHONE: 505 466-8120)	Date 04/23/2016
Title CONSULTANT (FAX: 505 466-9682)		
Approved by (Signature)	Name (Printed Typed)	Date
Title	Office	

Application approval 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.
Conditions of approval, if any, are attached.

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.

(Continued on page 2)

*(Instructions on page 2)

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
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 & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office
 AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015-		² Pool Code 51120		³ Pool Name RED LAKE; GLORIETA-YESO	
⁴ Property Code 315029		⁵ Property Name HAWK 9G FEDERAL			⁶ Well Number 23
⁷ OGRID No. 277558		⁸ Operator Name LIME ROCK RESOURCES II-A, L.P.			⁹ Elevation 3518.1

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
G	9	18 S	27 E		1720	NORTH	1720	EAST	EDDY

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 40	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.

HAWK "9G" FEDERAL #23
ELEV. = 3518.1'
LAT. = 32.7648283°N (NAD83)
LONG. = 104.2804939°W
NMSP EAST (FT)
N = 641980.56
E = 557579.69

NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83). LISTED NEW MEXICO STATE PLANE EAST COORDINATES ARE GRID (NAD83). BASIS OF BEARING AND DISTANCES USED ARE NEW MEXICO STATE PLANE EAST COORDINATES MODIFIED TO THE SURFACE.

¹⁷ OPERATOR CERTIFICATION

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.

Brian Wood **4-23-16**

Signature Date

BRIAN WOOD

Printed Name

brian@permitswest.com

E-mail Address

¹⁸ SURVEYOR CERTIFICATION

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.

AUGUST 17, 2015

Date of Survey

Filimon F. Jaramillo

Signature and Seal of Professional Surveyor

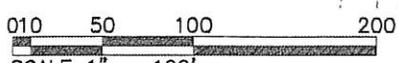
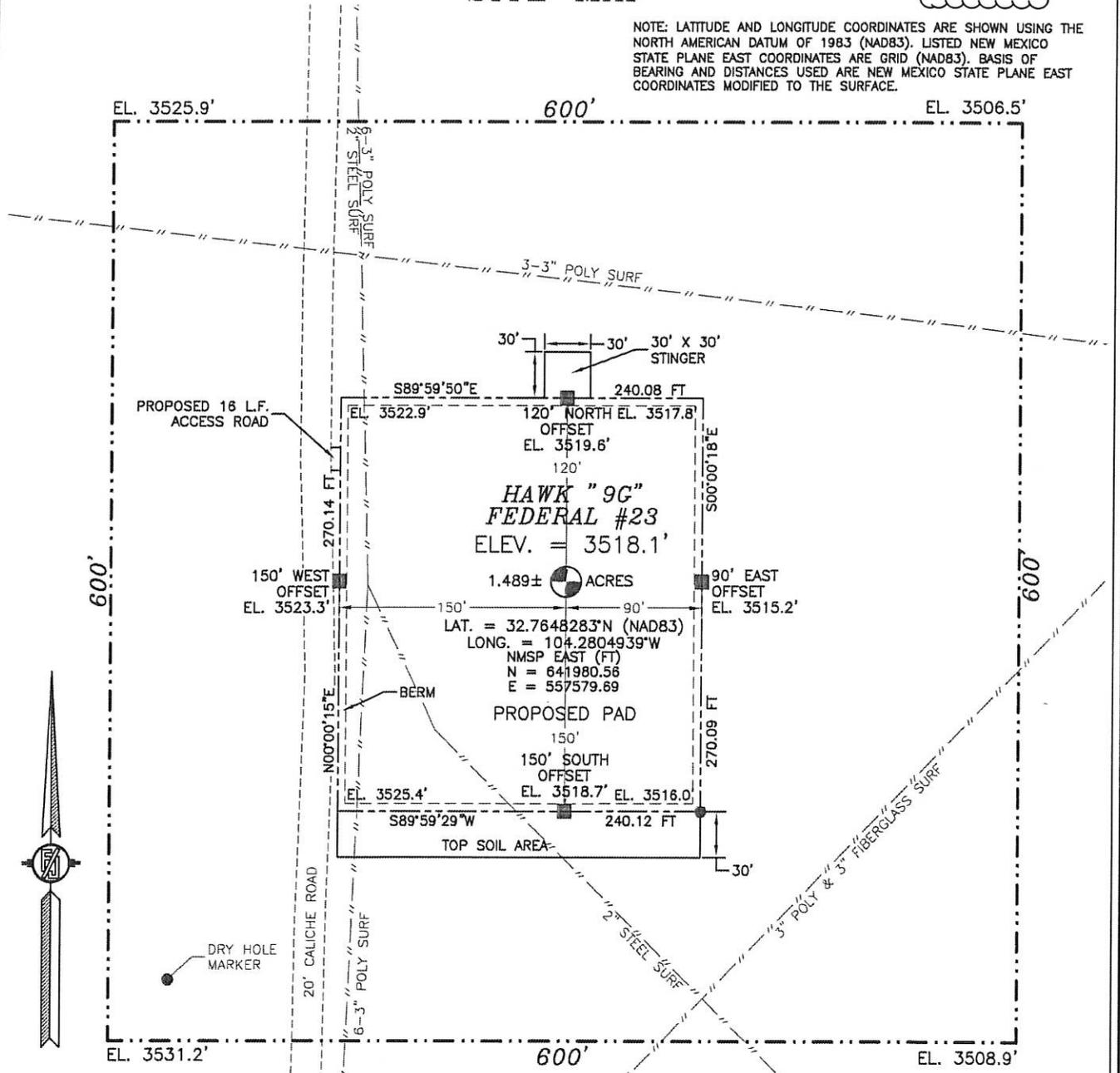
Certificate Number: FILIMON F. JARAMILLO, PLS 12797

SURVEY NO. 4187

SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 SITE MAP

MAP 4

NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83). LISTED NEW MEXICO STATE PLANE EAST COORDINATES ARE GRID (NAD83). BASIS OF BEARING AND DISTANCES USED ARE NEW MEXICO STATE PLANE EAST COORDINATES MODIFIED TO THE SURFACE.



DIRECTIONS TO LOCATION
 FROM CR. #225 (EMPIRE) AND CR. #227 (LITTLE DIAMOND) GO
 SOUTHWEST ON CR. #227 1.03 MILES, TURN LEFT ON CALICHE ROAD
 AND GO SOUTH 0.65 MILE, TURN RIGHT AND GO WEST 0.5 MILE,
 TURN LEFT AND GO SOUTH 878' TO A PROPOSED ROAD SURVEY AND
 FOLLOW FLAGS EAST 16' TO THE PROPOSED NORTHWEST PAD CORNER
 FOR THIS LOCATION.

LIME ROCK RESOURCES II-A, L.P.
HAWK "9G" FEDERAL #23
 LOCATED 1720 FT. FROM THE NORTH LINE
 AND 1720 FT. FROM THE EAST LINE OF
 SECTION 9, TOWNSHIP 18 SOUTH,
 RANGE 27 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO

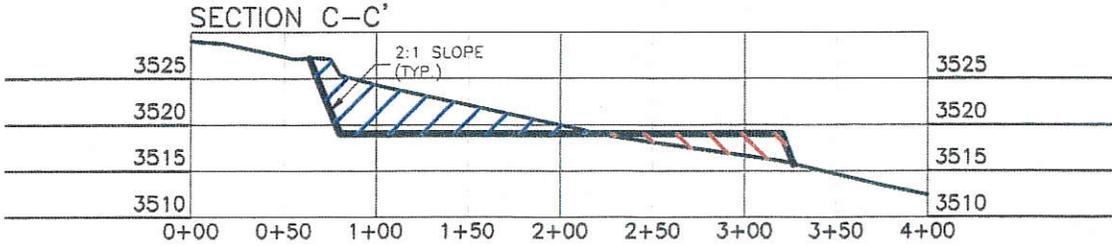
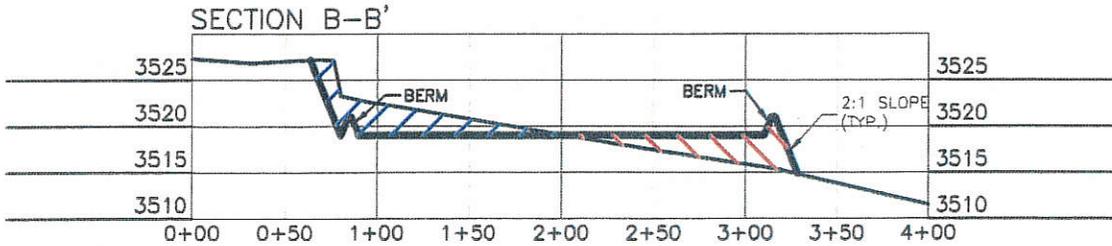
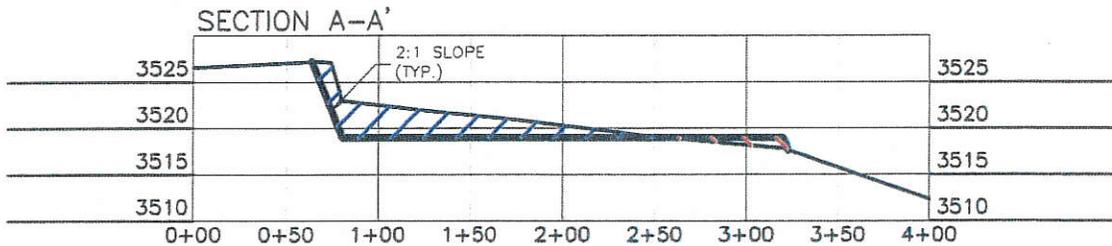
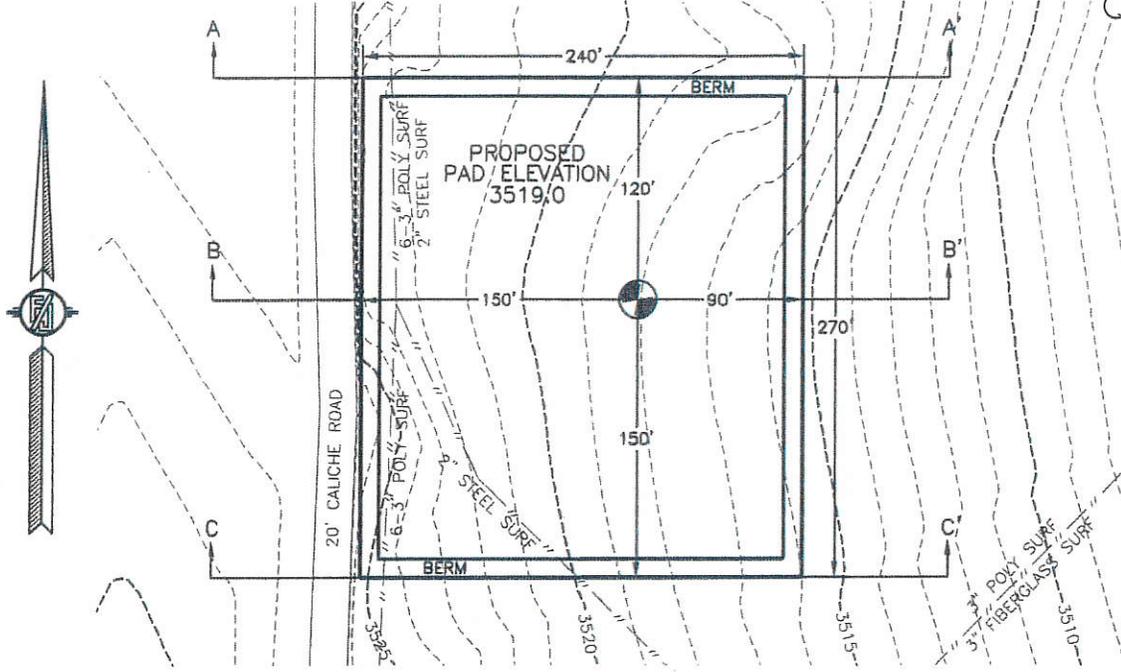
AUGUST 17, 2015

SURVEY NO. 4187

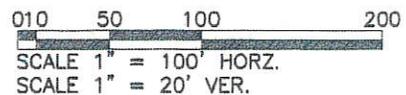
MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
 (575) 234-3341

HAWK "9G" FEDERAL #23 CROSS SECTIONS

MAP 4.1



LIME ROCK RESOURCES II-A, L.P.
HAWK "9G" FEDERAL #23
 LOCATED 1720 FT. FROM THE NORTH LINE
 AND 1720 FT. FROM THE EAST LINE OF
 SECTION 9, TOWNSHIP 18 SOUTH,
 RANGE 27 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO



CUT	FILL	NET
3914 CU. YD	1932 CU. YD	1982 CU. YD (CUT)

EARTHWORK QUANTITIES ARE ESTIMATED

MARCH 28, 2016

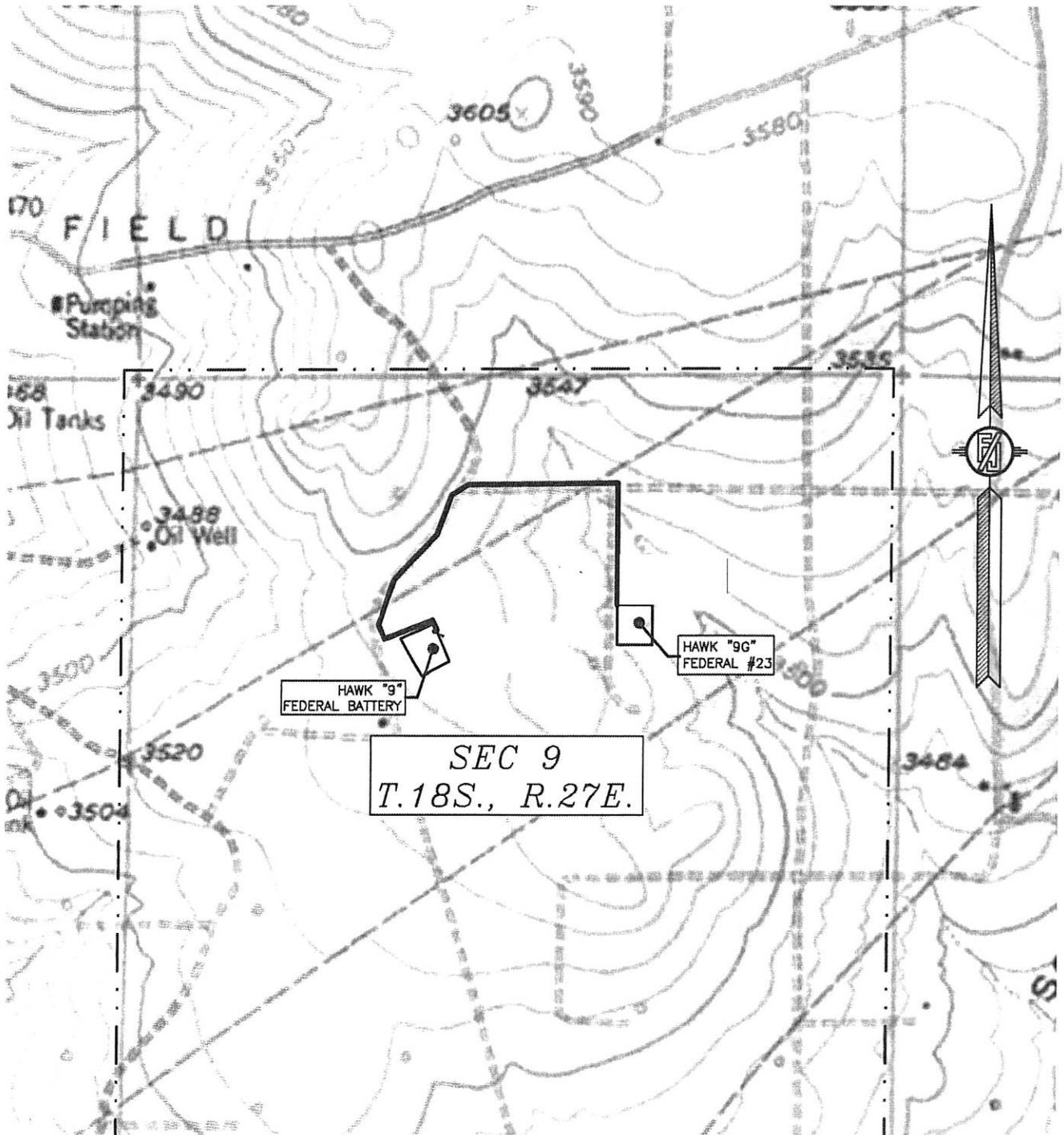
SURVEY NO. 4187

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
 (575) 234-3341

FLOWLINE PLAT
R-0-W FOR TWO-3" SDR 7 POLY SURFACE LINES (ONE GAS AND ONE PRODUCTION)
FROM HAWK "9G" FEDERAL #23 TO HAWK "9" FEDERAL BATTERY

MAP 5

LIME ROCK RESOURCES II-A, L.P.
CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AUGUST 17, 2015

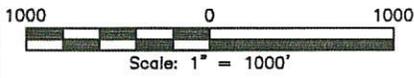
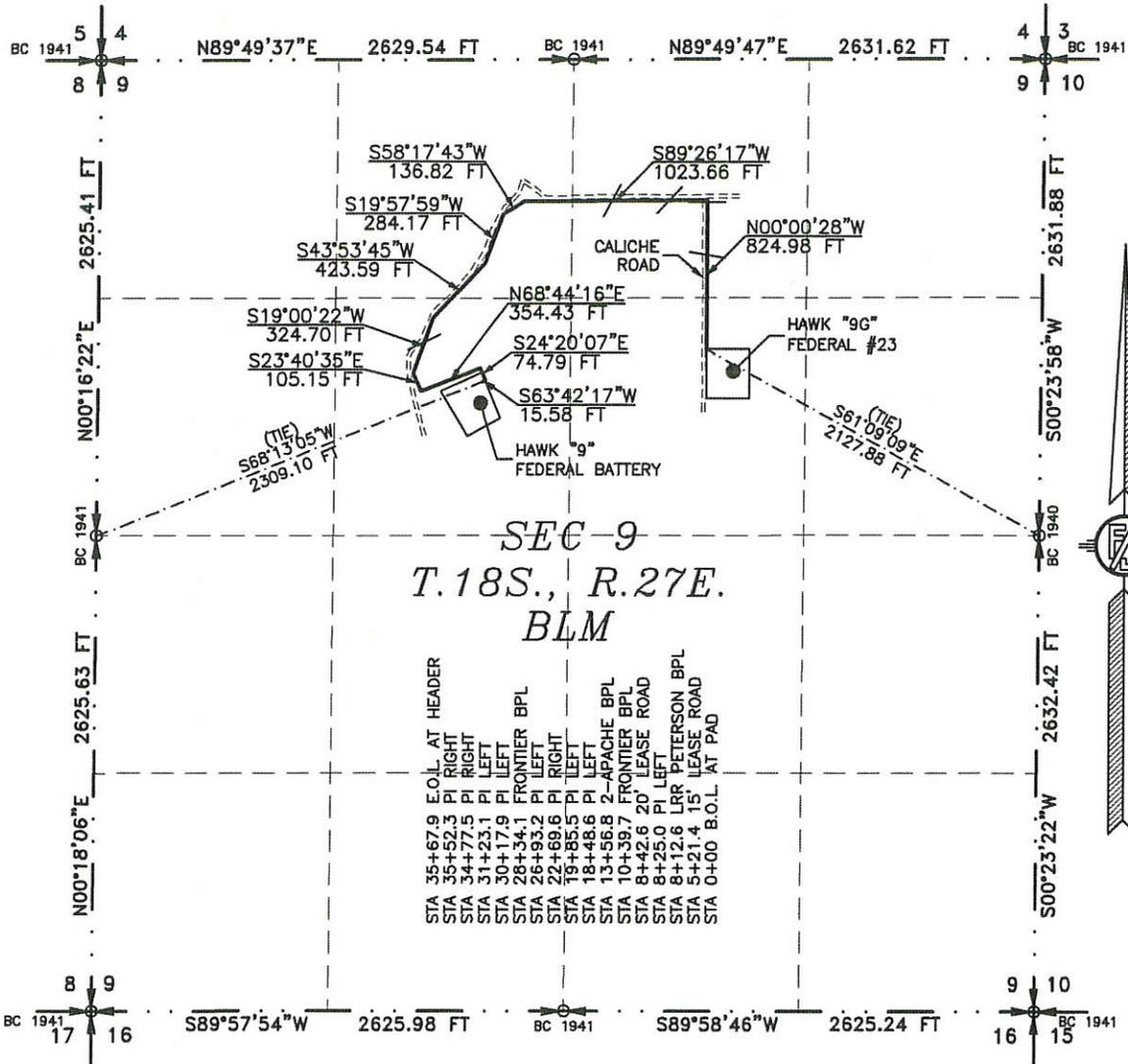


FLOWLINE PLAT

R-O-W FOR TWO-3" SDR 7 POLY SURFACE LINES (ONE GAS AND ONE PRODUCTION)
FROM HAWK "9G" FEDERAL #23 TO HAWK "9" FEDERAL BATTERY

MAP 6

LIME ROCK RESOURCES II-A, L.P.
CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
APRIL 25, 2016



GENERAL NOTES

- 1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.
- 2.) BASIS OF BEARING IS NMSP EAST MODIFIED TO SURFACE COORDINATES.

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 25 DAY OF APRIL, 2016

Filmon F. Jaramillo
 FILMON F. JARAMILLO PLS. 12797
 REG. SURVEYOR

MADRON SURVEYING, INC.
 301 SOUTH CANAL
 CARLSBAD, NEW MEXICO 88220
 Phone (575) 234-3341

SURVEY NO. 4187A

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
 (575) 234-3341

FLOWLINE PLAT
 R-0-W FOR TWO-3" SDR 7 POLY SURFACE LINES (ONE GAS AND ONE PRODUCTION)
 FROM HAWK "9G" FEDERAL #23 TO HAWK "9" FEDERAL BATTERY

MAP 7

LIME ROCK RESOURCES II-A, L.P.
CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AUGUST 17, 2015

DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 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 SW/4 NE/4 OF SAID SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M., WHENCE THE EAST QUARTER CORNER OF SAID SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M. BEARS S61°09'09"E, A DISTANCE OF 2127.88 FEET;
 THENCE N00°00'28"W A DISTANCE OF 824.98 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
 THENCE S89°26'17"W A DISTANCE OF 1023.66 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
 THENCE S58°17'43"W A DISTANCE OF 136.82 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
 THENCE S19°57'59"W A DISTANCE OF 284.17 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
 THENCE S43°53'45"W A DISTANCE OF 423.59 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
 THENCE S19°00'22"W A DISTANCE OF 324.70 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
 THENCE S23°40'35"E A DISTANCE OF 105.15 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
 THENCE N68°44'16"E A DISTANCE OF 354.43 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
 THENCE S24°20'07"E A DISTANCE OF 74.79 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
 THENCE S63°42'17"W A DISTANCE OF 15.58 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE WEST QUARTER CORNER OF SAID SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M. BEARS S68°13'05"W, A DISTANCE OF 2309.10 FEET;

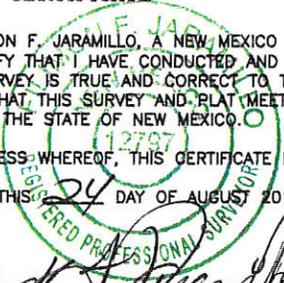
SAID STRIP OF LAND BEING 3567.86 FEET OR 216.23 RODS IN LENGTH, CONTAINING 2.457 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

SW/4 NE/4	284.78 L.F.	17.26 RODS	0.196 ACRES
NW/4 NE/4	1293.97 L.F.	78.42 RODS	0.891 ACRES
NE/4 NW/4	960.85 L.F.	58.23 RODS	0.662 ACRES
SE/4 NW/4	1028.25 L.F.	62.32 RODS	0.708 ACRES

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 24 DAY OF AUGUST 2015



MADRON SURVEYING, INC.
 301 SOUTH CANAL
 CARLSBAD, NEW MEXICO 88220
 Phone (575) 234-3341

SURVEY NO. 4187

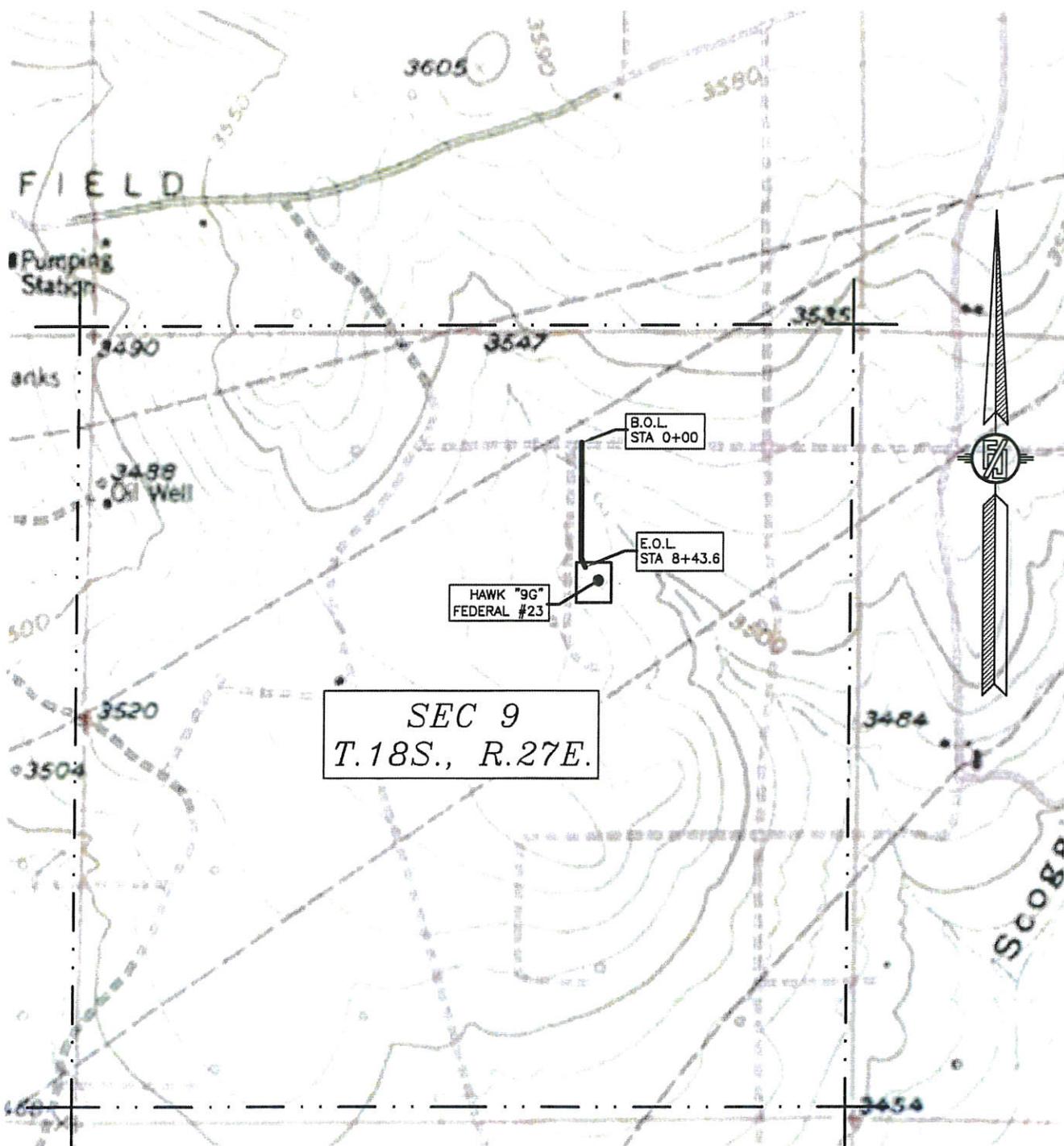
- GENERAL NOTES**
- 1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.
 - 2.) BASIS OF BEARING IS NMSP EAST MODIFIED TO SURFACE COORDINATES.

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
 (575) 234-3341

ELECTRIC LINE PLAT
ELECTRIC LINE TO CONNECT HAWK "9G" #23

MAP 8

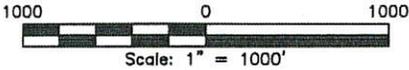
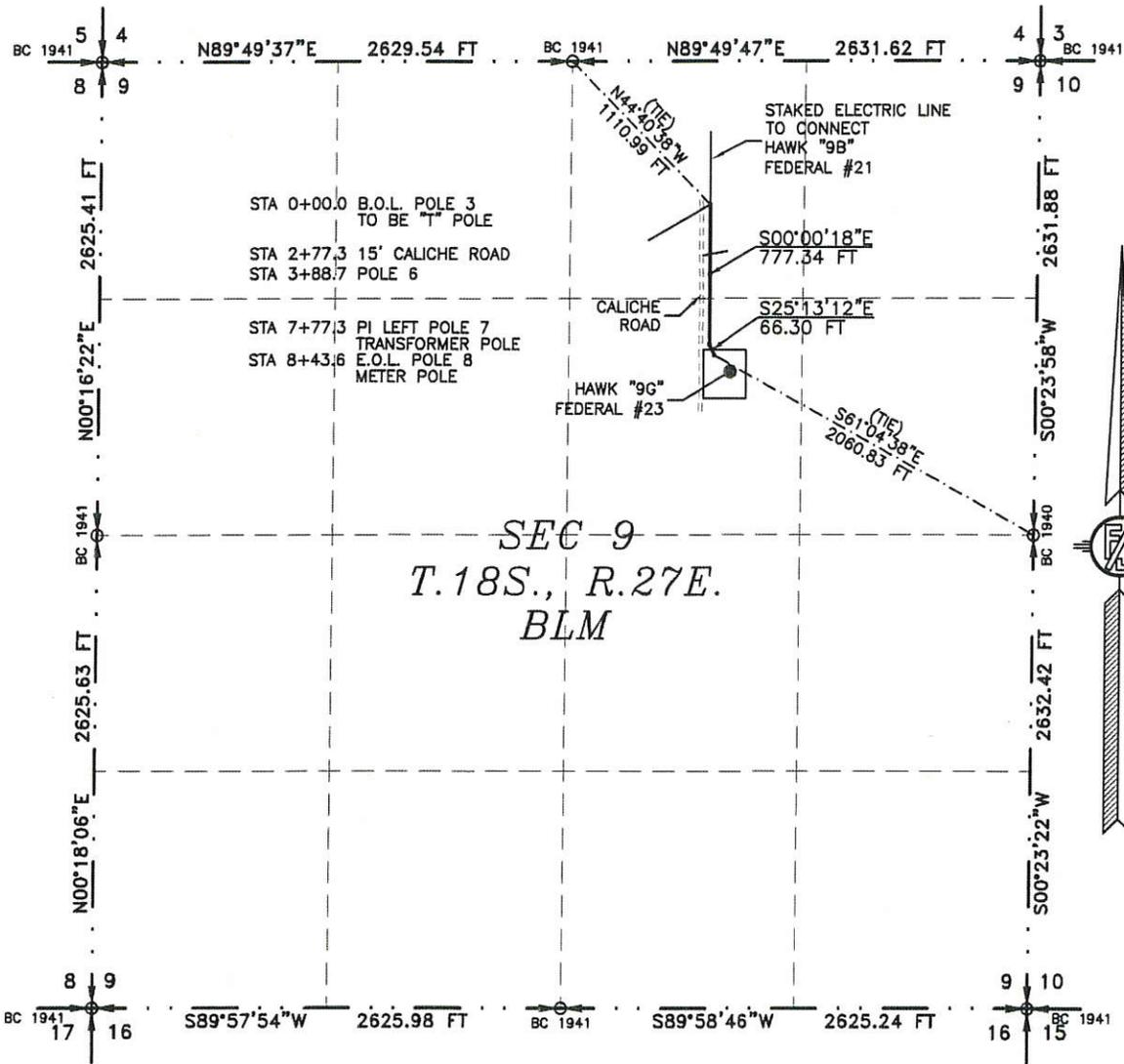
CENTRAL VALLEY ELECTRIC
CENTERLINE SURVEY OF AN ELECTRIC LINE CROSSING
SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AUGUST 17, 2015



ELECTRIC LINE PLAT
 ELECTRIC LINE TO CONNECT HAWK "9G" #23

MAP 9

CENTRAL VALLEY ELECTRIC
 CENTERLINE SURVEY OF AN ELECTRIC LINE CROSSING
 SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 AUGUST 17, 2015



- GENERAL NOTES**
- 1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.
 - 2.) BASIS OF BEARING IS NMSP EAST MODIFIED TO SURFACE COORDINATES.

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 24 DAY OF AUGUST 2015

FILIMON F. JARAMILLO, REG. 12797
 MADRON SURVEYING, INC.
 301 SOUTH CANAL
 CARLSBAD, NEW MEXICO 88220
 Phone (575) 234-3341

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
 (575) 234-3341 SURVEY NO. 4187E

ELECTRIC LINE PLAT
ELECTRIC LINE TO CONNECT HAWK "9G" #23

MAP 10

CENTRAL VALLEY ELECTRIC
CENTERLINE SURVEY OF AN ELECTRIC LINE CROSSING
SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AUGUST 17, 2015

DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 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 NW/4 NE/4 OF SAID SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M., WHENCE THE NORTH QUARTER CORNER OF SAID SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M. BEARS N44°40'38"W, A DISTANCE OF 1110.99 FEET;
THENCE S00°00'18"E A DISTANCE OF 777.34 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S25°13'12"E A DISTANCE OF 66.30 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE EAST QUARTER CORNER OF SAID SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M. BEARS S61°04'38"E, A DISTANCE OF 2060.83 FEET;

SAID STRIP OF LAND BEING 843.64 FEET OR 51.13 RODS IN LENGTH, CONTAINING 0.581 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NE/4	522.47 L.F.	31.67 RODS	0.360 ACRES
SW/4 NE/4	321.16 L.F.	19.46 RODS	0.221 ACRES

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 24 DAY OF AUGUST 2015

GENERAL NOTES

- 1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.
- 2.) BASIS OF BEARING IS NMSP EAST MODIFIED TO SURFACE COORDINATES.

Filmon F. Jaramillo
FILMON F. JARAMILLO PLS. 12797

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

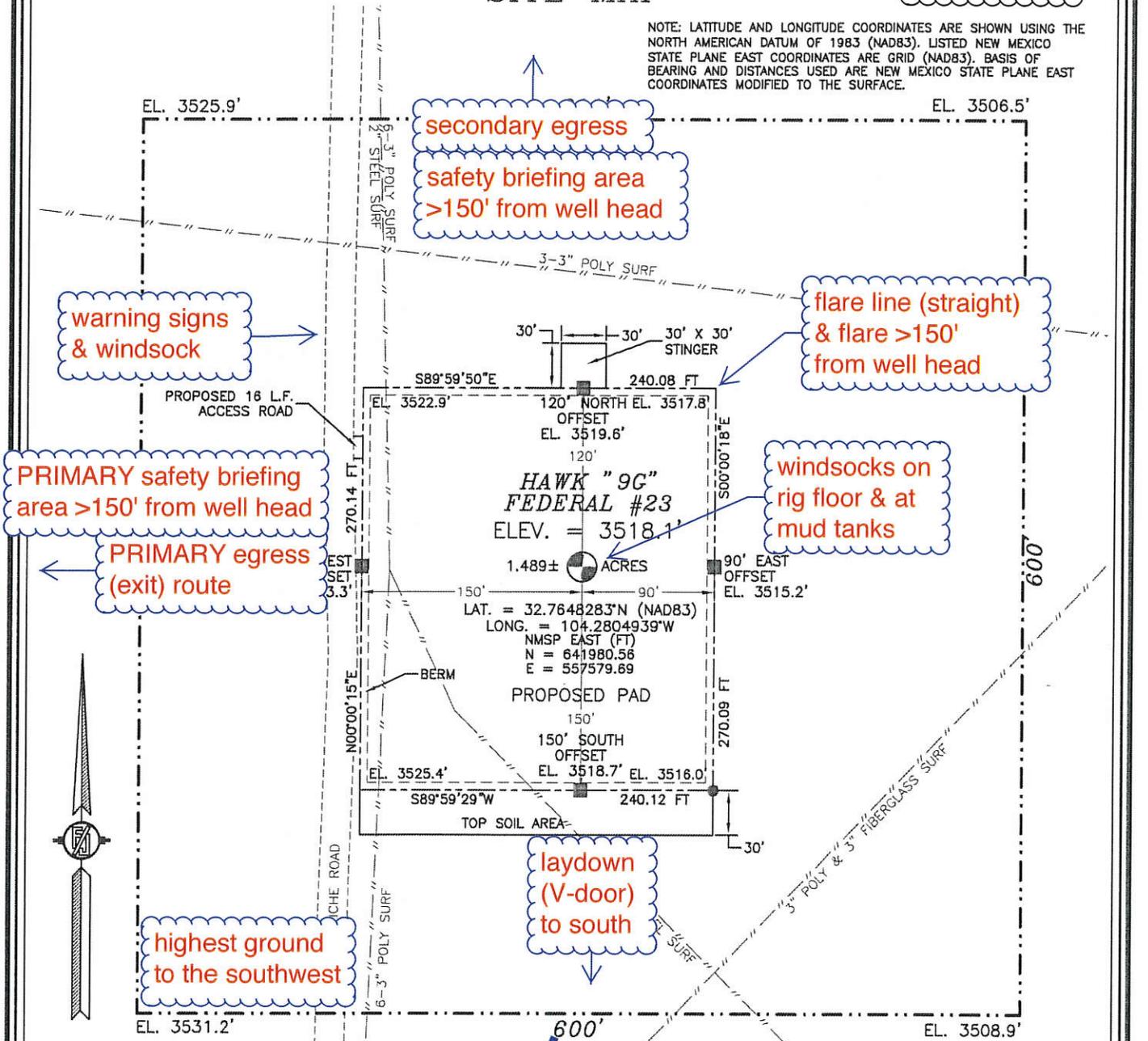
SURVEY NO. 4187E

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
(575) 234-3341

SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 SITE MAP

H2S PAGE 5

NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83). LISTED NEW MEXICO STATE PLANE EAST COORDINATES ARE GRID (NAD83). BASIS OF BEARING AND DISTANCES USED ARE NEW MEXICO STATE PLANE EAST COORDINATES MODIFIED TO THE SURFACE.



PRIMARY safety briefing area >150' from well head
 PRIMARY egress (exit) route

secondary egress
 safety briefing area >150' from well head

flare line (straight) & flare >150' from well head

windsocks on rig floor & at mud tanks

laydown (V-door) to south

highest ground to the southwest

prevailing wind blows from SSW

LIME ROCK RESOURCES II-A, L.P.
 HAWK "9G" FEDERAL #23
 LOCATED 1720 FT. FROM THE NORTH LINE
 AND 1720 FT. FROM THE EAST LINE OF
 SECTION 9, TOWNSHIP 18 SOUTH,
 RANGE 27 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO

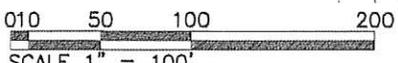
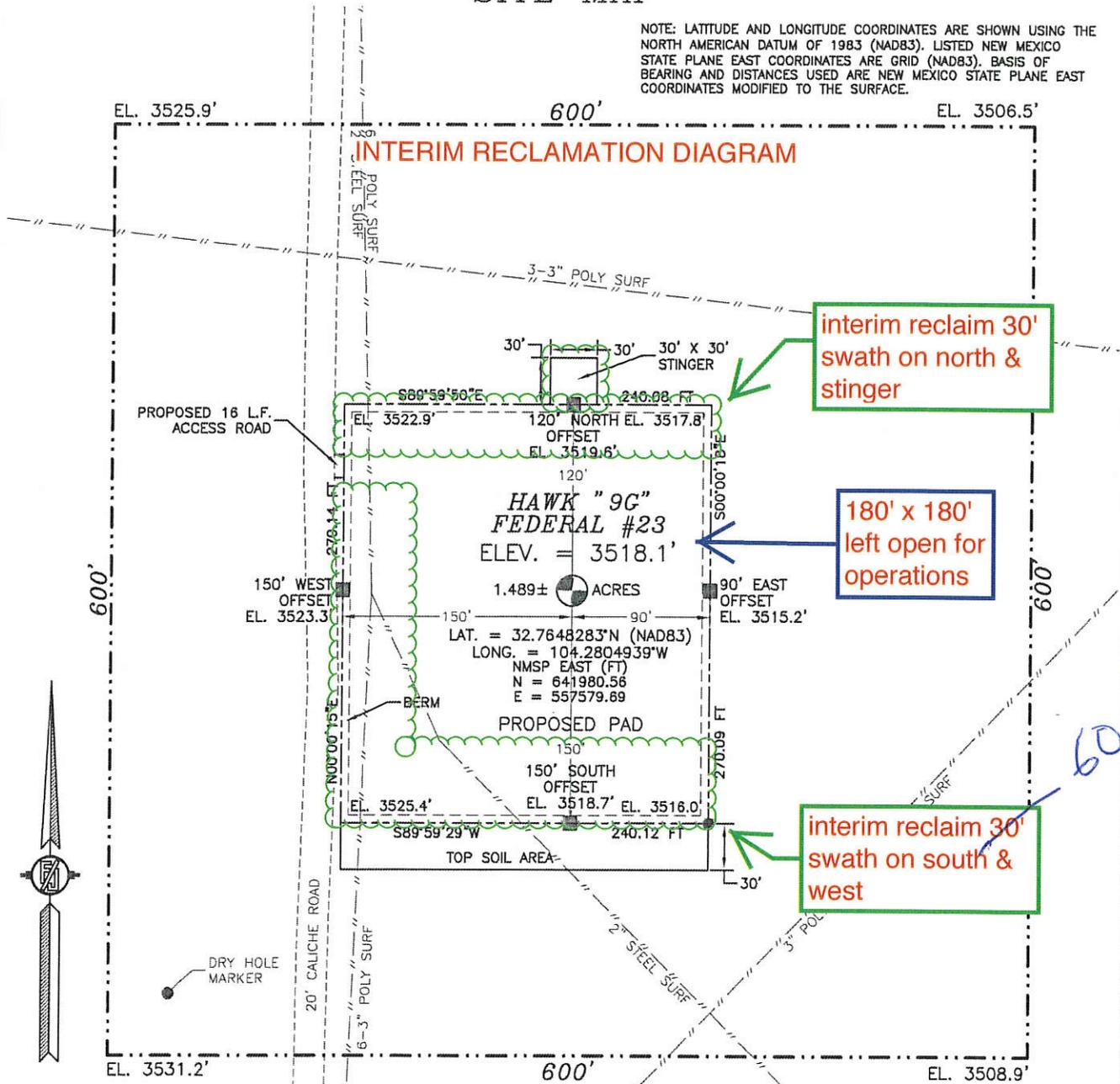
AUGUST 17, 2015

SURVEY NO. 4187

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
 (575) 234-3341

SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 SITE MAP

NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83). LISTED NEW MEXICO STATE PLANE EAST COORDINATES ARE GRID (NAD83). BASIS OF BEARING AND DISTANCES USED ARE NEW MEXICO STATE PLANE EAST COORDINATES MODIFIED TO THE SURFACE.



SCALE 1" = 100'
 DIRECTIONS TO LOCATION
 FROM CR. #225 (EMPIRE) AND CR. #227 (LITTLE DIAMOND) GO
 SOUTHWEST ON CR. #227 1.03 MILES, TURN LEFT ON CALICHE ROAD
 AND GO SOUTH 0.65 MILE, TURN RIGHT AND GO WEST 0.5 MILE,
 TURN LEFT AND GO SOUTH 878' TO A PROPOSED ROAD SURVEY AND
 FOLLOW FLAGS EAST 16' TO THE PROPOSED NORTHWEST PAD CORNER
 FOR THIS LOCATION.

LIME ROCK RESOURCES II-A, L.P.
HAWK "9G" FEDERAL #23
 LOCATED 1720 FT. FROM THE NORTH LINE
 AND 1720 FT. FROM THE EAST LINE OF
 SECTION 9, TOWNSHIP 18 SOUTH,
 RANGE 27 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO

AUGUST 17, 2015

SURVEY NO. 4187

MADRON SURVEYING, INC. 361 SOUTH CANAL CARLSBAD, NEW MEXICO
 (575) 234-3341

Pipeline Right-of-way

APPLICATION FOR TRANSPORTATION AND
UTILITY SYSTEMS AND FACILITIES
ON FEDERAL LANDS

FORM APPROVED
OMB Control Number: 0596-0082
Expiration Date: 1/31/2017

FOR AGENCY USE ONLY

NOTE: Before completing and filing the application, the applicant should completely review this package and schedule a preapplication meeting with representatives of the agency responsible for processing the application. Each agency may have specific and unique requirements to be met in preparing and processing the application. Many times, with the help of the agency representative, the application can be completed at the preapplication meeting.

Application Number

Date Filed

1. Name and address of applicant (*include zip code*)

Lime Rock Resources II-A, L. P.
1111 Bagby St., Suite 4600
Houston, TX 77002-2559

2. Name, title, and address of authorized agent if
different from item 1 (*include zip code*)

Permits West, Inc.
37 Verano Loop
Santa Fe, NM 87508713 292-9528

3. Telephone (area code)

Applicant
713 292-9528
Authorized Agent
505 466-8120

4. As applicant are you? (*check one*)

- a. Individual
- b. Corporation*
- c. Partnership/Association*
- d. State Government/State Agency
- e. Local Government
- f. Federal Agency

* If checked, complete supplemental page

5. Specify what application is for: (*check one*)

- a. New authorization
- b. Renewing existing authorization No.
- c. Amend existing authorization No.
- d. Assign existing authorization No.
- e. Existing use for which no authorization has been received *
- f. Other*

* If checked, provide details under item 7

6. If an individual, or partnership are you a citizen(s) of the United States? Yes No

7. Project description (describe in detail): (a) Type of system or facility, (*e.g., canal, pipeline, road*); (b) related structures and facilities; (c) physical specifications (*Length, width, grading, etc.*); (d) term of years needed; (e) time of year of use or operation; (f) Volume or amount of product to be transported; (g) duration and timing of construction; and (h) temporary work areas needed for construction (*Attach additional sheets, if additional space is needed.*)

- a) proposed 3" O. D. poly surface gas and flow lines for Hawk 9 G Federal 23
- b) associated oil well Hawk 9 G Federal 23
- c) 30' x 3,567.86' = 2.457 acres in E2NW4 & W2NE4 9-18s-27e Eddy County NM
- d) 30 years
- e) year round
- f) 75 Mcfd, 75 bopd & 200 bwpd
- g) 1 day
- h) none

8. Attach a map covering area and show location of project proposal

9. State or Local government approval: Attached Applied for Not Required

10. Nonreturnable application fee: Attached Not required

11. Does project cross international boundary or affect international waterways? Yes No (*if "yes," indicate on map*)

12. Give statement of your technical and financial capability to construct, operate, maintain, and terminate system for which authorization is being requested.

Lime Rock is capable.

13a. Describe other reasonable alternative routes and modes considered.
Could go cross country and reduce length by approximately 2,200'

b. Why were these alternatives not selected?
BLM prefers to group land uses

c. Give explanation as to why it is necessary to cross Federal Lands.
Both well and battery are on BLM surface

14. List authorizations and pending applications filed for similar projects which may provide information to the authorizing agency. (Specify number, date, code, or name)
See APD dated 4-23-16

15. Provide statement of need for project, including the economic feasibility and items such as: (a) cost of proposal (construction, operation, and maintenance); (b) estimated cost of next best alternative; and (c) expected public benefits.

- a) \$36,000
- b) \$13,000
- c) increase tax base & employment

16. Describe probable effects on the population in the area, including the social and economic aspects, and the rural lifestyles.
Negligible - no house within 1 mile.
Continued oil field employment in area with >75 years of oil field history

17. Describe likely environmental effects that the proposed project will have on: (a) air quality; (b) visual impact; (c) surface and ground water quality and quantity; (d) the control or structural change on any stream or other body of water; (e) existing noise levels; and (f) the surface of the land, including vegetation, permafrost, soil, and soil stability.

- a) emissions during travel on dirt road
- b) more black lines parallel to existing black lines
- c) no discharge into surface water or fresh water aquifer
- d) none
- e) noise will increase during construction
- f) vegetation may be broken

18. Describe the probable effects that the proposed project will have on (a) populations of fish, plantlife, wildlife, and marine life, including threatened and endangered species; and (b) marine mammals, including hunting, capturing, collecting, or killing these animals.

- a) Vegetation may be trampled or crushed by pipelines. Small fauna may find shelter under pipelines
- b) No marine life present

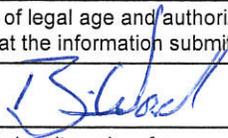
19. State whether any hazardous material, as defined in this paragraph, will be used, produced, transported or stored on or within the right-of-way or any of the right-of-way facilities, or used in the construction, operation, maintenance or termination of the right-of-way or any of its facilities. "Hazardous material" means any substance, pollutant or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. 9601 et seq., and its regulations. The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the Resource Conservation and Recovery Act of 1976 (RCRA), as amended, 42 U.S.C. 6901 et seq., and its regulations. The term hazardous materials also includes any nuclear or byproduct material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCLA Section 101(14), 42 U.S.C. 9601(14), nor does the term include natural gas.

No hazardous material will be used, produced, transported, or stored on or within the right-of-way.

20. Name all the Department(s)/Agency(ies) where this application is being filed.
BLM's Carlsbad NM Field Office

I HEREBY CERTIFY, That I am of legal age and authorized to do business in the State and that I have personally examined the information contained in the application and believe that the information submitted is correct to the best of my knowledge.

Signature of Applicant

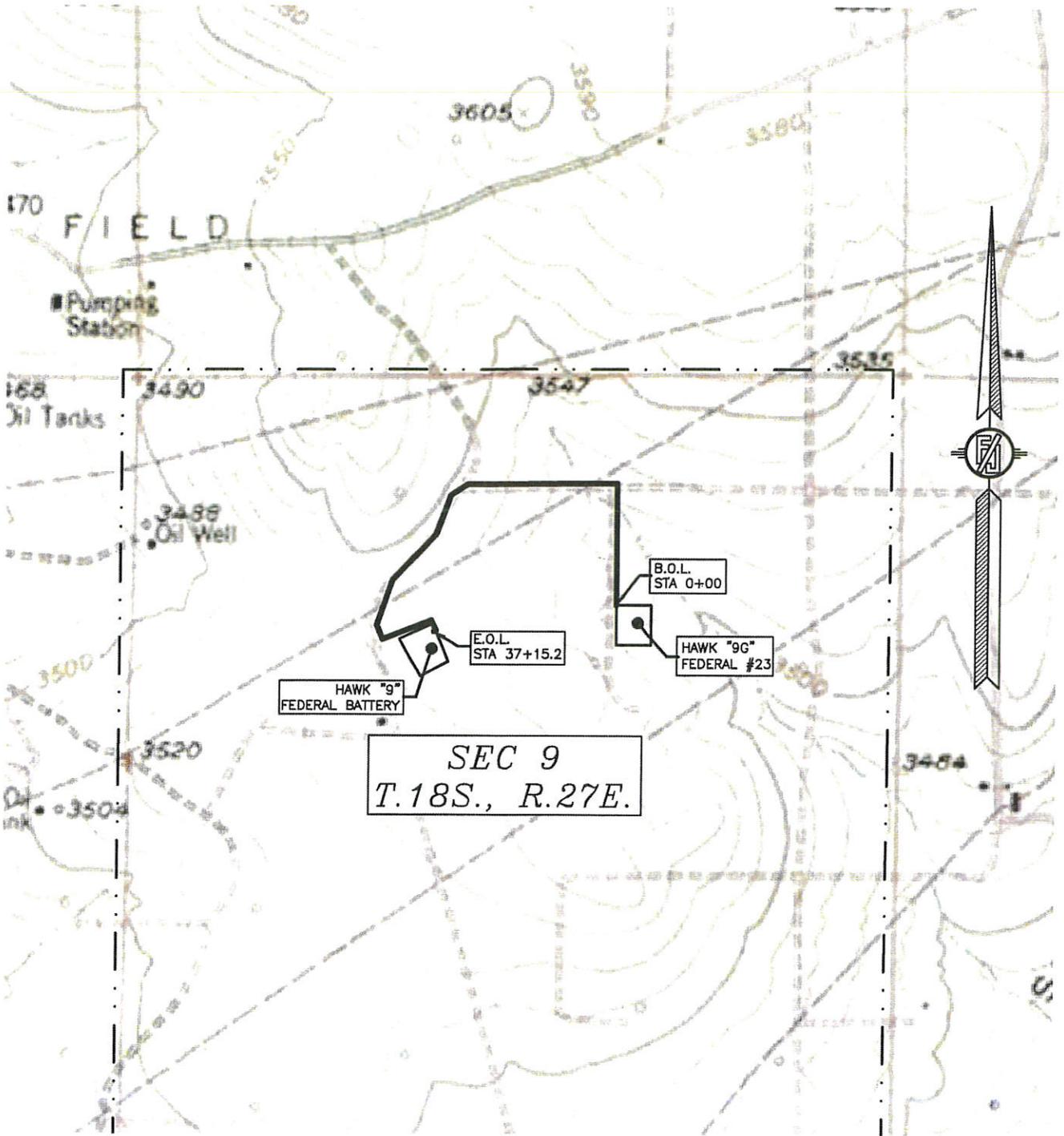


Date
06/14/2016

Title 18, U.S.C. Section 1001, makes 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.

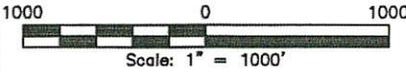
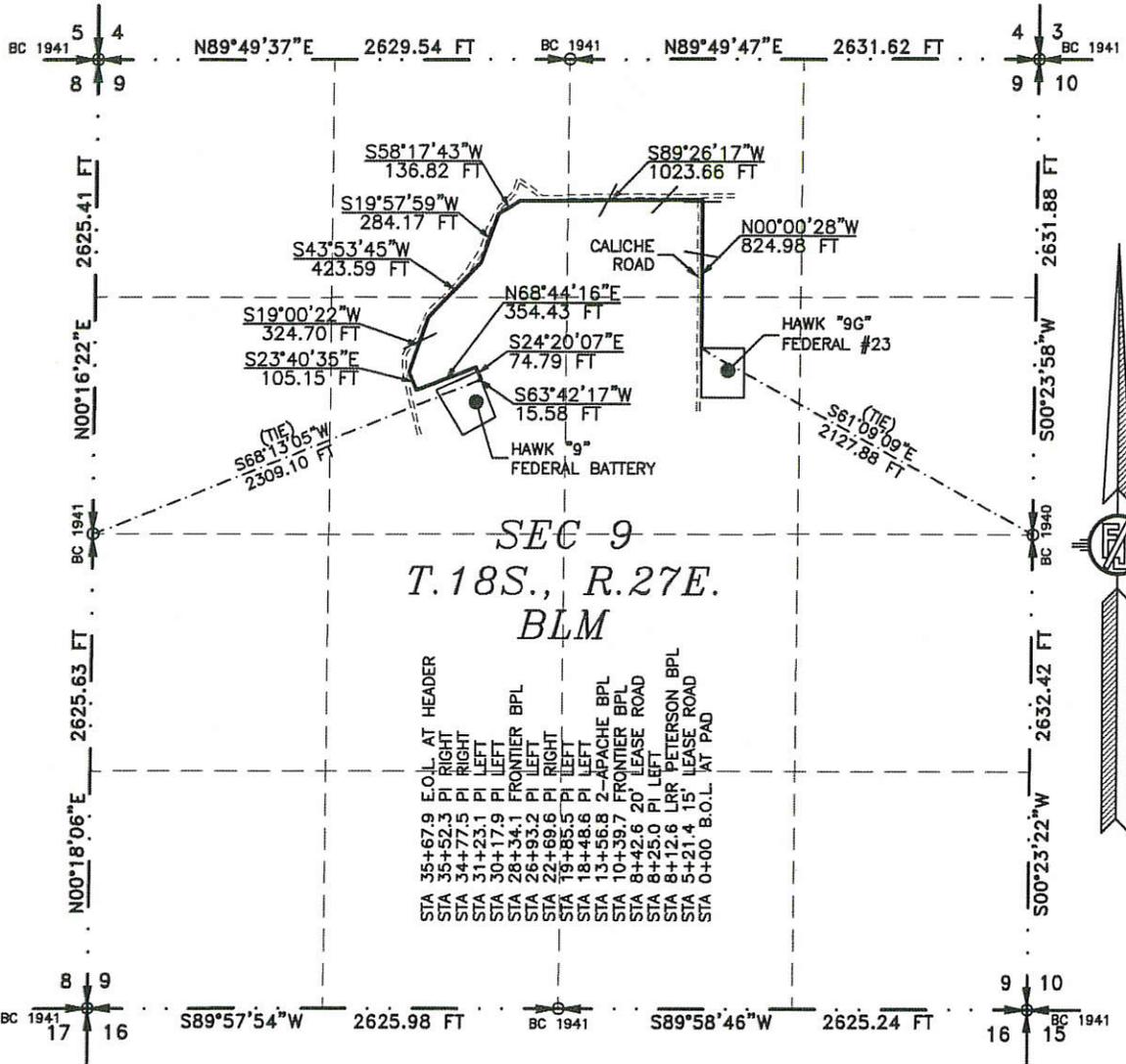
FLOWLINE PLAT
R-O-W FOR TWO-3" SDR 7 POLY SURFACE LINES (ONE GAS AND ONE PRODUCTION)
FROM HAWK "9G" FEDERAL #23 TO HAWK "9" FEDERAL BATTERY

LIME ROCK RESOURCES II-A, L.P.
CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
APRIL 25, 2016



FLOWLINE PLAT
 R-O-W FOR TWO-3" SDR 7 POLY SURFACE LINES (ONE GAS AND ONE PRODUCTION)
 FROM HAWK "9G" FEDERAL #23 TO HAWK "9" FEDERAL BATTERY

LIME ROCK RESOURCES II-A, L.P.
 CENTERLINE SURVEY OF A PIPELINE CROSSING
 SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 APRIL 25, 2016



GENERAL NOTES

- 1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.
- 2.) BASIS OF BEARING IS NMSP EAST MODIFIED TO SURFACE COORDINATES.

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 25 DAY OF APRIL, 2016

Filimon F. Jaramillo
 FILIMON F. JARAMILLO P.E.S. 12797

MADRON SURVEYING, INC.
 301 SOUTH CANAL
 CARLSBAD, NEW MEXICO 88220
 Phone (575) 234-3341

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

SURVEY NO. 4187A

FLOWLINE PLAT

R-0-W FOR TWO-3" SDR 7 POLY SURFACE LINES (ONE GAS AND ONE PRODUCTION)
FROM HAWK "9C" FEDERAL #23 TO HAWK "9" FEDERAL BATTERY

LIME ROCK RESOURCES II-A, L.P.
CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
APRIL 25, 2016

DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 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 SW/4 NE/4 OF SAID SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M., WHENCE THE EAST QUARTER CORNER OF SAID SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M. BEARS S61°09'09"E, A DISTANCE OF 2127.88 FEET;
THENCE N00°00'28"W A DISTANCE OF 824.98 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S89°26'17"W A DISTANCE OF 1023.66 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S58°17'43"W A DISTANCE OF 136.82 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S19°57'59"W A DISTANCE OF 284.17 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S43°53'45"W A DISTANCE OF 423.59 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S19°00'22"W A DISTANCE OF 324.70 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S23°40'35"E A DISTANCE OF 105.15 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE N68°44'16"E A DISTANCE OF 354.43 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S24°20'07"E A DISTANCE OF 74.79 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S63°42'17"W A DISTANCE OF 15.58 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE WEST QUARTER CORNER OF SAID SECTION 9, TOWNSHIP 18 SOUTH, RANGE 27 EAST, N.M.P.M. BEARS S68°13'05"W, A DISTANCE OF 2309.10 FEET;

SAID STRIP OF LAND BEING 3567.86 FEET OR 216.23 RODS IN LENGTH, CONTAINING 2.457 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

SW/4 NE/4	284.78 L.F.	17.26 RODS	0.196 ACRES
NW/4 NE/4	1293.97 L.F.	78.42 RODS	0.891 ACRES
NE/4 NW/4	960.85 L.F.	58.23 RODS	0.662 ACRES
SE/4 NW/4	1028.25 L.F.	62.32 RODS	0.708 ACRES

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 25 DAY OF APRIL 2016

Filimon F. Jaramillo
FILIMON F. JARAMILLO RES. 42797
NEW MEXICO SURVEYOR

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

SURVEY NO. 4187A

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

GENERAL NOTES

- 1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.
- 2.) BASIS OF BEARING IS NMSP EAST MODIFIED TO SURFACE COORDINATES.

Appendix C – Plant Survey Report



Lime Rock Resources II-A, L.P.

Proposed Hawk 9 G Federal 23 Well, Access Road, Surface Flow Lines, and Overhead Power Line SW/NE, Section 9, Township 18 South, Range 27 East, Eddy County, New Mexico

Plant Survey Report

Prepared by Robyn W. Tierney, Permits West, Inc., Santa Fe, New Mexico

July 21, 2016

INTRODUCTION

The proposed project is located on BLM lands (Lease No. NMNM 025604) in the SW/4 NE/4, Section 9, Township 18 South, Range 27 East, Eddy County, New Mexico (Spring Lake, NM, 7.5 minute USGS quadrangle), approximately eight miles southeast of Artesia, New Mexico.

Project Description

The well pad containing the proposed Hawk 9 G Federal 23 well will be 270-feet N/S by 240-feet E/W in size, for a total area of 1.488 acres. A 30-foot by 30-foot stinger will be placed on the north edge of the pad. A proposed access road will extend 16 feet west in a 20 foot wide corridor from the northwestern corner of the proposed pad to an existing caliche road that runs N/S along the western boundary of the proposed pad. A topsoil stockpile measuring 240 feet by 30 feet (0.165 acres) will be located along the south side of the well pad.

Two three-inch O.D. poly surface pipelines (one gas and one production) will be laid 3,567.86-feet north, west, southwest, and northeast from the northwestern corner of the proposed well pad to the northeastern corner of Lime Rock's existing Hawk 9 Federal tank battery. The total length of the proposed pipeline corridor is 3,567.86 feet in a 30-foot ROW corridor for a total disturbance area of 2.457 acres.

An overhead power line will installed by Central Valley Electric Cooperative (CVEC) from the northwestern corner of the proposed well pad to an electric power line tie in. The proposed power line is 843.64 feet long in a 30-foot ROW for a total disturbance area of 0.581 acres.

Following interim reclamation, the stinger and well pad area will be reduced in size by reclaiming a 30 foot-wide swath on the north side of the pad and 60 foot-wide swaths on the south and west sides of the pad. This will reduce the size of the proposed pad by approximately 50% to a 180-foot x 180-foot or 0.744 acre area around the pump jack.

Purpose of Survey and Report

This botanical survey report discusses the potential effects of approving the Application to Drill and the applications for 16 feet of access road, and 3,567.86 feet of surface flow lines (1 gas and 1 production) in a 30 foot ROW corridor, and 843.64 feet of overhead power line in a 30 foot ROW corridor on federal and state listed plant species and designated critical habitats that may occur within Eddy County and are protected under the Endangered Species Act (ESA, 16 USC 1531 et seq.).

An endangered plant species is one that is considered to be in danger of becoming extinct throughout all or a significant portion of its range. A threatened species is one that is likely to become endangered within the foreseeable future. The federal Endangered Species Act (ESA) protects all listed species from harm or “take” which is broadly defined as to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” Any such activity includes destruction of habitat and can be defined as a “take” even if it is unintentional or accidental. The U.S. Fish and Wildlife Service (USFWS) has jurisdiction over federally listed threatened and endangered plant species.

In addition to federally listed endangered and threatened species, which are legally protected under the ESA, the USFWS has developed a list of proposed and candidate species, species of concern, and experimental populations. Proposed species are those for which a proposed rule to list them as endangered or threatened has been published in the Federal Register; a designation that offers limited protection under the ESA. A candidate species is one for which the USFWS currently has enough information to support a proposal to list it as a threatened or endangered species under the Endangered Species Act (ESA), but for which development of a proposed listing regulation is precluded by other higher priority listing activities. A species of concern refers to a species that may be in decline or may require specific conservation actions. An experimental population is a reintroduced population established outside of its current range, but within its historical range and is treated as a proposed species. Candidate species, species of concern, and experimental populations are not afforded legal protection under the federal ESA or under Section 75-6-1 of the New Mexico Statutes Annotated (NMSA 1978).

The proposed project area was also surveyed in accordance with BLM Manual 6840, for the potential presence of sensitive species identified from the New Mexico State Endangered Plant Species List (Section 75-6-1 NMSA 1978) and the New Mexico Bureau of Land Management State Office’s (NMSO BLM) list of sensitive species. Again, these species are not protected under the ESA, but are part of an overall effort by the BLM to focus management efforts toward maintaining habitats under a multiple use mandate.

Project Area

The proposed project is located in an area containing porous reef masses of dolostones interspersed among shallow eolian dunal deposits (Broadhead and Speer 1993). The elevation of the project area is 3,518 feet at the proposed Hawk 9 G Federal 23 well head. Disturbances in and around the project area are extensive and include: existing caliche roads to the north and west of the well pad, a 2-inch surface steel pipeline that crosses the proposed pad’s southwestern corner, poly surface flow lines to the north of-- and along the west edge of the proposed pad, a reclaimed pad to the southwest of the proposed

pad, and a second reclaimed well pad and the existing Hawk 9 Federal tank battery west of the proposed well pad. Most of the ground surface west, southwest and northwest of the project area has previously been disturbed by grading and blading and vegetative cover is sparse.

The project area is located in the Pecos Valley subsection of the Southern Great Plains physiographic province. The Pecos River alluvial valley and alluvial terraces runs north to south, approximately 2.75 miles west of the project area. The geology of the project area is dominated by hills comprised of interbedded dolomites, redbeds, mudstones, and gypsum-dominated evaporites of the Tansill and the upper Permian Salado formations (NMBGR, McCraw, Land, and Williams 2011). Karstic depressions and features also are evident in the vicinity of the project area and many of the larger drainages in the area appear to contain subsurface karst features.

The project area is located on top of a broad, flat hill between Logan Draw and Scoggin Draw at an elevation of 3,518 feet. The hill is located at the head of a tributary drainage to Scoggin Draw to the southeast. The proposed project is approximately 2.75 miles east of the Pecos River floodplain. No effect to the Pecos River floodplain is anticipated from the proposed project.

Soils throughout the project area are composed of the Gypsum land-Cottonwood complex, 0 to 3 percent slopes (NRCS 2016). Gypsum land soils are found on the shoulders and toe slopes of ridges and hills. They are comprised of residuum weathered from gypsum. Cottonwood soils are also found on shoulders and slopes of hills and ridges and comprised of residuum weathered from gypsum. A typical profile of the Cottonwood soils consists of a loam (0 to 8 inches), and bedrock (0 to 60 inches). These soils are well drained, with very low water storage capacity.

Vegetation in the project area is classified as the Gypsum-Bedrock (Dick-Peddie 1993) and the Chihuahuan desert scrub communities (Brown et al. 1998, 2007). Dominant species observed throughout the project area included coldenia (*Tiquilia hispidissima*), cresote (*Larrea tridentata*), soaptree yucca (*Yucca elata*), tobosa (*Pleuraphis mutica*), black grama (*Bouteloua eriopoda*), and three-awn (*Aristida* sp.). Forb and cactus species included beavertail cactus (*Opuntia basilaris*), Christmas pencil cactus (*Cylindropuntia leptocaulis*), Texas rainbow cactus (*Echinocereus dasyacanthus*), fleabane daisy (*Erigeron* sp.), spectacle pod (*Dimorphocarpa* sp.), desert madwort (*Alyssum* sp.), and purple nama (*Nama hispidum*).

METHODOLOGY

The proposed project area was surveyed on April 29, 2016 by botanist, Robyn Tierney, and again on July 12, 2016 by biologist Geoff Carpenter. Weather during the April survey was clear and sunny with temperatures in the mid- to upper 70s°F. Weather during the July survey was clear and sunny with temperatures in the low 100s°F. Prior to conducting the survey, databases identifying the Threatened and Endangered plant species and species of concern listed by the U.S. Fish and Wildlife Service's Information, Planning, and Conservation System (IPaC 2016), the State of New Mexico's Endangered Plant Species Program (EMNRD 2016), the New Mexico Rare Plant Technical Committee (NMRPTC 1999,

revised 2015), and the New Mexico State Office, Bureau of Land Management (NMSO-BLM) were examined.

The pedestrian survey was conducted by walking a series of parallel belt transects spaced at 50 to 100-foot intervals across the proposed well pad, a 50-foot wide area marking the limits of disturbance around the well pad and access road, and a 50-foot wide corridor along both sides of the proposed surface pipeline corridor. The purpose of the survey was to inspect for and to identify federally listed species and other species of concern that may occur within the project area. All plants observed in the project area were identified in order to provide a more complete description of the project area’s environment. A list of the plants observed in the project area is included at the end of this report in Table 2.

SURVEY RESULTS

Species of Interest to the U.S. Fish and Wildlife Service (USFWS) and the State of New Mexico: This report discusses the potential for disturbance to the plant species of concern that may occur in Eddy County and the project area as identified by the U.S. Fish and Wildlife Service’s Information, Planning, and Conservation System (IPaC 2016), the BLM, and the State of New Mexico Endangered Plant Species Program (EMNRD 2015, NMRPTC 1999, revised 2015)

Details of the status, habitat, and the potential to occur in the project area for each of these species are presented in Table 1.

Table 1. Species of interest, status, habitat, and potential to occur in Eddy County and in the proposed Hawk 9 G Federal 23 project area (IPaC 2016, EMNRD 2015, NMRPTC 1999, revised 2015)

SPECIES STATUS	HABITAT	POTENTIAL TO OCCUR IN THE PROJECT AREA*
<p><i>Amsonia tharpii</i> Tharp’s blue-star</p> <p>USFWS: SoC</p> <p>State of New Mexico: E</p> <p>BLM: S</p>	<p>Occupies limestone and gypsum hills composed of sedimentary outcrops or alluvium derived from Upper Permian beds of the Rustler, Gatuña, and Castille Formations containing gypsum or Ogallala-like caliche fragments in Chihuahuan desert scrub communities; 3,100-3,500 ft. (NMRPTC 1999, Howard 2007, cited in Roth 2013).</p>	<p>Three known populations of this plant are located north, southwest, and southeast of the project area. The highly disturbed substrates in the project area consist of shallow gypsic soils derived from Tanil and Salado formations rather than outcrops and alluvium and are not suitable for this species. No appropriate habitat</p>

SPECIES STATUS	HABITAT	POTENTIAL TO OCCUR IN THE PROJECT AREA*
<p><i>Anulocaulis leiosolenus</i> var. <i>gypsogenus</i> Pecos gyp ringstem</p> <p>USFWS: SoC</p> <p>State of New Mexico: SoC</p> <p>BLM: --</p>	<p>Species is confined to open gypsum outcrops and gypsum rich soils; 3,300 – 4,600 ft. (NMRPTC 1999).</p>	<p>Project area is located in highly disturbed desert scrub and is located in shallow gypsic soils derived from Tanil and Salado formations. No plants observed, though species has been previously observed in the area. Appropriate habitat</p>
<p><i>Aquilegia chaplinei</i> Chaplins columbine</p> <p>USFWS: SoC</p> <p>State of New Mexico: SoC</p> <p>BLM: S</p>	<p>Found near limestone seeps and springs in the montane scrub or riparian canyon bottoms of remote canyons; 4,700 – 5,500 ft. (NMRPTC 1999).</p>	<p>Project area is located in desert scrub and is nearly 1,000 feet lower than species elevational range. No appropriate habitat</p>
<p><i>Astragalus gypsodes</i> Gypsum milkvetch</p> <p>USFWS: SoC</p> <p>State of New Mexico: SoC</p> <p>BLM: S</p>	<p>Endemic to the gypsum flats and low gullied gypsic hills of the Castile Formation in Chihuahuan desert scrub; 3,500 – 4,000 ft. (NMRPTC 1999).</p>	<p>Project area is located in highly disturbed desert scrub and is located in shallow gypsic soils derived from Tanil and Salado formations. No plants observed. Appropriate habitat</p>
<p><i>Chaetopappa hersheyi</i> Hershey's cliff daisy</p> <p>USFWS: SoC</p> <p>State of New Mexico: SoC</p> <p>BLM: --</p>	<p>Endemic to steep canyons of the Guadalupe Mountains. Habitat consists of steep limestone cliffs in pinon-juniper woodland and Rocky Mountain montane coniferous forest communities; 5,000 ft. (NMRPTC 1999).</p>	<p>Project area is located in desert scrub and is nearly 2,000 feet lower than species elevational range. No appropriate habitat</p>

SPECIES STATUS	HABITAT	POTENTIAL TO OCCUR IN THE PROJECT AREA*
<p><i>Cirsium wrightii</i> Wright's marsh thistle</p> <p>USFWS: C</p> <p>State of New Mexico: E</p> <p>BLM: --</p>	<p>Obligate wetland species found in wet, alkaline soils of spring seeps and along the marshy edges of streams and ponds; (3,450 - 8,500 ft. (NMRPTC 1999).</p>	<p>Project area is located in desert scrub with no springs, seeps, or marshes. No appropriate habitat</p>
<p><i>Coryphantha robustispina</i> ssp. <i>scheeri</i> Scheer pincushion</p> <p>USFWS: C</p> <p>State of New Mexico: E</p> <p>BLM: S</p>	<p>Favors nearly level areas in desert grassland Chihuahuan desert scrub, usually found on gravelly or silty soils and occasionally on rocky limestone or gypseous benches or bajadas, 3,300 – 3,600 ft. (NMRPTC 1999).</p>	<p>Project area is located in highly disturbed desert scrub and shallow gypsic soils derived from Tanil and Salado formations. No appropriate habitat</p>
<p><i>Dermatophyllum guadalupense</i> Guadalupe mesquite</p> <p>USFWS: SoC</p> <p>State of New Mexico: SoC</p> <p>BLM: S</p>	<p>Found in outcrops of pink, limy, fine-grained sandstone that is 1-2 percent gypsum by analysis with a surface pavement of limestone gravel and cobble, in Chihuahuan desert scrub and juniper savanna; 5,260 – 6,650 ft. (NMRPTC 1999).</p>	<p>Project area is nearly 2,000 feet lower than species elevational range. Only known Eddy County location straddles the Otero/Eddy county line and is limited to the Brokeoff Mountains and Upper Dog Canyon area of the Guadalupe Mountains in New Mexico and adjacent Culberson County, Texas (NMRPTC 1999) No appropriate habitat</p>
<p><i>Echinocereus fendleri</i> var. <i>kuenzleri</i> Kuenzler's hedgehog cactus</p> <p>USFWS: E</p> <p>State of New Mexico: E</p> <p>BLM: E</p>	<p>Found on gentle, gravelly to rocky slopes and benches on limestone or limy sandstone in Great Plains grassland, oak woodland, or pinon-juniper woodland at the north end of the Guadalupe Mountains; 5,200 – 6,600 ft. (NMRPTC 1999).</p>	<p>Project area is located in desert scrub and is nearly 3,000 feet lower than species elevational range. No appropriate habitat</p>

SPECIES STATUS	HABITAT	POTENTIAL TO OCCUR IN THE PROJECT AREA*
<p><i>Ericameria nauseosa</i> var. <i>texensis</i> Guadalupe rabbitbrush</p> <p>USFWS: SoC</p> <p>State of New Mexico: SoC</p> <p>BLM: --</p>	<p>Endemic to the Guadalupe-Brokeoff range of mountains, plant is found in crevices on faces of limestone cliffs and adjacent to boulders of canyon woodlands; less frequently in open gravel alluvium of stream beds in pinon-juniper woodland and Chihuahuan desert scrub; 4,900 – 7,000 ft. (NMRPTC 1999).</p>	<p>Project area is located nearly 3,000 feet lower than species elevational range. No appropriate habitat</p>
<p><i>Eriogonum gypsophilum</i> Gypsum wild buckwheat</p> <p>USFWS: T</p> <p>State of New Mexico: E</p> <p>BLM: T</p>	<p>Plant is restricted to almost pure gypsum that is sparsely vegetated with other gypsophilous plants; 3,280 – 3,600 ft. (NMRPTC 1999).</p>	<p>Project area is located in highly disturbed desert scrub and is located in shallow gypsic soils derived from Tanil and Salado formations which are not strictly defined as pure gypsum. No appropriate habitat</p>
<p><i>Escobaria guadalupensis</i> Guadalupe pincushion cactus</p> <p>USFWS: SoC</p> <p>State of New Mexico: SoC</p> <p>BLM: --</p>	<p>Plant is found in cracks in limestone and rocky soils of broken terrain in open oak and pinon-juniper woodland, also in lower montane coniferous forest and Chihuahuan desert scrub; 5,200 – 7,200 ft. (NMRPTC 1999).</p>	<p>Project area is located in desert scrub and is nearly 2,000 feet lower than species elevational range. No appropriate habitat</p>
<p><i>Escobaria sneedii</i> var. <i>leei</i> Lee's pincushion cactus</p> <p>USFWS: T</p> <p>State of New Mexico: E</p> <p>BLM: T</p>	<p>Plant is found in cracks in limestone in areas of broken terrain and steep slopes of Chihuahuan desert scrub of the Guadalupe Mountains; 4,000 – 5,000 ft. (NMRPTC 1999).</p>	<p>Project area is located in desert scrub and is nearly 1,000 feet lower than species elevational range. No appropriate habitat</p>

SPECIES STATUS	HABITAT	POTENTIAL TO OCCUR IN THE PROJECT AREA*
<p><i>Hedeoma apiculate</i> McKittrick pennyroyal</p> <p>USFWS: SoC</p> <p>State of New Mexico: SoC</p> <p>BLM: --</p>	<p>Endemic to the Guadalupe Mountains, plant is found in limestone crevices of steep canyon walls; usually on north-facing slopes or in areas that sheltered and relatively moist in the Guadalupe Mounains; 5,400 – 8,400 ft. (NMRPTC 1999).</p>	<p>Project area is located in desert scrub and is nearly 3,000 feet lower than species elevational range. No appropriate habitat</p>
<p><i>Hexalectris nitida</i> Shining crested coralroot</p> <p>USFWS: SoC</p> <p>State of New Mexico: E</p> <p>BLM: --</p>	<p>Plant is found in leaf litter under oaks in the deep canyons of the Guadalupe Mountains; 4,300 ft. (NMRPTC 1999).</p>	<p>Project area is located in desert scrub and is nearly 1,000 feet lower than species elevational range. No appropriate habitat</p>
<p><i>Hexalectris revoluta</i> Curly crested coralroot</p> <p>USFWS: SoC</p> <p>State of New Mexico: SoC</p> <p>BLM: S</p>	<p>Plant is found in heavy leaf litter under oaks or in thin humic soils among rock outcrops; 6,400 ft. (NMRPTC 1999).</p>	<p>Project area is located in desert scrub and is nearly 1,000 feet lower than species elevational range. No appropriate habitat</p>
<p><i>Justicia wrightii</i> Wright's justicia</p> <p>USFWS: SoC</p> <p>State of New Mexico: SoC</p> <p>BLM: --</p>	<p>Found in dry, gravelly clay soils over limestone on flats or on limestone benches on low hills in Chihuahuan desert scrubland and shortgrass grasslands; 3,900 ft. (NMRPTC 1999, Poole et al. 2007).</p>	<p>Project area is located in desert scrub and is not located on flats or on limestone benches. No appropriate habitat</p>

SPECIES STATUS	HABITAT	POTENTIAL TO OCCUR IN THE PROJECT AREA*
<p><i>Linum allredii</i> Allred's flax</p> <p>USFWS: SoC</p> <p>State of New Mexico: SoC</p> <p>BLM: S</p>	<p>Plant is found on scarps and hillsides on exposed pale sandy gypsum of the Castile Formation in Chihuahuan Desert scrub; 3,900 ft. (NMRPTC 1999).</p>	<p>Project area is located in highly disturbed desert scrub and is located in shallow gypsic soils derived from Tanil and Salado formations. No appropriate habitat</p>
<p><i>Muhlenbergia villiflora</i> var. <i>villosa</i> Hairy muhly</p> <p>USFWS: SoC</p> <p>State of New Mexico: SoC</p> <p>BLM: --</p>	<p>Found in open desert grassland and desert savanna on alkaline and calcareous soils; 4,800 – 5,200 ft. (NMRPTC 1999).</p>	<p>Project area is located in desert scrub and is nearly 1,000 feet lower than species elevational range. No appropriate habitat</p>
<p><i>Nama xylopodium</i> Cliff nama</p> <p>USFWS: SoC</p> <p>State of New Mexico: SoC</p> <p>BLM:</p>	<p>Found in partly shaded limestone cliffs and outcrops in montane scrub to pinon-juniper oak woodlands of the Guadalupe Mountains; 4,500 – 6,500 ft. (NMRPTC 1999).</p>	<p>Project area is located in desert scrub and is nearly 1,500 feet lower than species elevational range. No appropriate habitat</p>
<p><i>Penstemon cardinalis</i> ssp. <i>regalis</i> Guadalupe penstemon</p> <p>USFWS: SoC</p> <p>State of New Mexico: SoC</p> <p>BLM: S</p>	<p>Plant is found on limestone slopes and canyon bottoms in montane scrub, pinon-juniper woodlands, and lower montane coniferous forests; 4,500 – 6,000 ft. (NMRPTC 1999).</p>	<p>Project area is located in desert scrub and is nearly 1,500 feet lower than species elevational range. No appropriate habitat</p>

SPECIES STATUS	HABITAT	POTENTIAL TO OCCUR IN THE PROJECT AREA*
<p><i>Perityle quinqueflora</i> Five-flowered rock daisy</p> <p>USFWS: SoC</p> <p>State of New Mexico: SoC</p> <p>BLM: --</p>	<p>Plant is found in crevices of limestone bluffs, cliffs in high canyons and caprock; 5,000 – 6,000 ft. (NMRPTC 1999).</p>	<p>Project area is located in desert scrub and is nearly 2,000 feet lower than species elevational range. No appropriate habitat</p>
<p><i>Polygala rimulicola</i> var. <i>rimulicola</i> Guadalupe milkwort</p> <p>USFWS: SoC</p> <p>State of New Mexico: SoC</p> <p>BLM: --</p>	<p>Plant is found in cool crevices of limestone cliffs in montane coniferous forests; 5,000 – 8,000 ft. (NMRPTC 1999).</p>	<p>Project area is located in desert scrub and is nearly 2,500 feet lower than species elevational range. No appropriate habitat</p>
<p><i>Salvia summa</i> Supreme sage</p> <p>USFWS: SoC</p> <p>State of New Mexico: SoC</p> <p>BLM: --</p>	<p>Restricted to partly shaded limestone cliffs in the Guadalupe mountains; 5,000 – 7,000 ft. (NMRPTC 1999).</p>	<p>Project area is located in desert scrub and is nearly 2,500 feet lower than species elevational range. No appropriate habitat</p>
<p><i>Solidago wrightii</i> var. <i>guadalupensis</i> Guadalupe Mountains goldenrod</p> <p>USFWS: SoC</p> <p>State of New Mexico: SoC</p> <p>BLM: --</p>	<p>Plant is found on limestone outcrops and substrates and is most commonly associated with acacia-juniperus-dasyliirion-lechuguilla, oak, oak-maple, and yellow pine-maple-hophornbeam-madrone vegetation types of the Guadalupe Mountains; 4,300 – 7,100 ft. (NMRPTC 1999).</p>	<p>Project area is located in desert scrub and is nearly 1,500 feet lower than species elevational range. No appropriate habitat</p>

SPECIES STATUS	HABITAT	POTENTIAL TO OCCUR IN THE PROJECT AREA*
<i>Streptanthus sparsiflorus</i> Guadalupe jewelflower USFWS: SoC State of New Mexico: SoC BLM: S	Found in rugged limestone canyon bottoms and montane scrub; 5,000 – 7,000 ft. (NMRPTC 1999).	Project area is located in desert scrub and is nearly 2,500 feet lower than species elevational range. No appropriate habitat
<i>Valeriana texana</i> Texas tobacco-root USFWS: SoC State of New Mexico: SoC BLM: --	Plant is found in shaded, moist limestone or igneous cliffs, occasionally in canyon bottoms and in boulder fields in creek bottoms, within pinon-juniper woodland and montane coniferous forest; 5,200 – 8,000 ft. (NMRPTC 1999).	Project area is located in desert scrub and is nearly 2,500 feet lower than species elevational range. No appropriate habitat

Status USFWS – U.S Fish and Wildlife Service (federal) and New Mexico (state) listed species: Endangered (E) – An animal or plant species in danger of extinction throughout all or a significant portion of its range. Threatened (T) – An animal or plant species likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Candidate (C) - Candidate species are plants and animals for which the U.S. Fish and Wildlife Service (FWS) has sufficient information on their biological status and threats to propose them as endangered or threatened under the Endangered Species Act (ESA), but for which development of a proposed listing regulation is precluded by other higher priority listing activities. Sensitive (S) and Species of Concern (SoC)

The project area has been disturbed and contains marginally suitable habitat consisting of “open gypsum outcrops and gypsum rich soils” for Pecos gyp ringstem (*Anulocaulis leiosolenus* var. *gypsogenus*), a federal and state species of concern. No plants were observed during the botanical survey of the proposed project area, though the species has been observed near other wells in this area. Thus, the proposed project would not likely contribute to a trend towards federal listing or cause a loss of viability to the Pecos gyp ringstem population or species as a whole.

The project area has been disturbed and contains marginally suitable habitat consisting of “low gullied gypsic hills” for the gypsum milkvetch (*Astragalus gypsoides*), a federal and state species of concern. No plants were observed during the botanical survey. Thus, the proposed project would not likely contribute to a trend towards federal listing or cause a loss of viability to the gypsum milkvetch population or species as a whole.

No federal or state listed plant species were observed in the project area (IPaC 2016, EMNRD 2015, NMRPTC 1999, revised 2015).

No BLM plant species of concern were observed in the project area.

Plant species that were observed during the survey are listed in Table 2 below. Plant identifications are from a variety of sources including: *Rare Plants of Texas* (Poole et al. 2007) and the herbarium database from the Centennial Museum, University of Texas, El Paso (Centennial Museum, UTEP 2016). Scientific names are from these sources and the USDA Plants Database (2016).

Table 2. Plants observed in the vicinity of the proposed Hawk 9 G Federal 23 project area

Scientific Name	Common Name
Shrubs and Subshrubs	
<i>Larrea tridentata</i>	Creosote
<i>Tiquilia hispidissima</i>	Coldenia
Grasses and Grass-like Plants	
<i>Aristida spp.</i>	Three-awn species
<i>Bouteloua eriopoda</i>	Black grama
<i>Bouteloua breviseta</i>	Gyp grama
<i>Pleuraphis mutica</i>	Tobosa
Forbs and Cacti	
<i>Cylindropuntia leptocaulis</i>	Christmas pencil cactus
<i>Dimorphocarpa wislizenii</i>	Spectacle pod
<i>Echinocereus dasyacanthus</i>	Texas rainbow cactus
<i>Erigeron sp.</i>	Spiny aster species
<i>Linum puberulum</i>	Plains flax
<i>Nama hispidum</i>	Purple nama
<i>Oenothera hartwegii</i>	Hartweg's sundrops
<i>Opuntia basilaris</i>	Beavertail cactus
<i>Yucca elata</i>	Soaptree yucca

Vegetation in the project area is classified as the Gypsum-Bedrock (Dick-Peddie 1993) and the Chihuahuan desert scrub communities (Brown et al. 1998, 2007). Dominant species observed throughout the project area included coldenia (*Tiquilia hispidissima*), creosote (*Larrea tridentata*), soaptree yucca (*Yucca elata*), tobosa (*Pleuraphis mutica*), black grama (*Bouteloua eriopoda*), and three-awn (*Aristida* sp.). Forb and cactus species included beavertail cactus (*Opuntia basilaris*), Christmas pencil cactus (*Cylindropuntia leptocaulis*), Texas rainbow cactus (*Echinocereus dasyacanthus*), fleabane daisy (*Erigeron* sp.), spectacle pod (*Dimorphocarpa* sp.), desert madwort (*Alyssum* sp.), and purple nama (*Nama hispidum*).

No perennial streams, alkali seeps or wetlands were recorded in the immediate area of the project area (USFWS 2016, National Wetlands Inventory) and none were observed within the boundaries of the well pad, surface pipeline corridor, power line corridor, existing road corridors, or buffer zones around these features.

No noxious weed species listed by the New Mexico Department of Agriculture (NMDA, Gonzales 2009), were observed in the proposed project area.

DISCUSSION

The U.S. Fish and Wildlife Service's Information, Planning, and Conservation System (IPaC 2016) the State of New Mexico (EMNRD 2015), and the New Mexico Rare Plant Technical Committee (NMRPTC 1999, revised 2015) list 27 Threatened, Endangered or species of concern in the project area and in Eddy County, New Mexico.

No federal or state listed plant species were observed in the project area (IPaC 2016, EMNRD 2015, NMRPTC 1999, revised 2015).

The project area has been disturbed and contains marginally suitable habitat consisting of "open gypsum outcrops and gypsum rich soils" for Pecos gyp ringstem (*Anulocaulis leiosolenus* var. *gypsogenus*), a federal and state species of concern. No plants were observed during the botanical survey of the proposed project area, though the species has been observed near other wells in this area. Thus, the proposed project would not likely contribute to a trend towards federal listing or cause a loss of viability to the Pecos gyp ringstem population or species as a whole.

The project area has been disturbed and contains marginally suitable habitat consisting of "low gullied gypsic hills" for the gypsum milkvetch (*Astragalus gypsoides*), a federal and state species of concern. No plants were observed during the botanical survey. Thus, the proposed project would not likely contribute to a trend towards federal listing or cause a loss of viability to the gypsum milkvetch population or species as a whole.

No BLM plant species of concern were observed in the project area.

The proposed Hawk 9 G Federal 23 project would have no effect on any federally listed threatened or endangered plant species. In addition, no critical habitat occurs within or near the proposed project and the proposed project would not modify existing or proposed critical habitat. Therefore no USFWS consultation is necessary for this project.

RECOMMENDATIONS

- Earth-moving equipment should be washed prior to being brought onto the well site to help prevent the introduction of noxious weeds to the project area.
- To limit any impacts to vegetation and to protect any threatened or endangered species that were not observed during the April 2016 field survey, workers would be instructed not to park off of existing roads or in undisturbed areas.

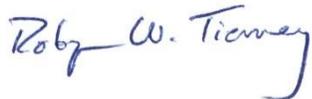
- The project area will be subject to erosion while soils remain bare. Interim reclamation of the well pad must be completed within 6 months of well completion. Surface disturbance will exceed one acre and the project will require a Storm Water Pollution Prevention Plan (SWPPP).
- Upon completion of the project, successful reclamation of the project area should include clean-up of all materials and equipment. Revegetation of the project area should include use of certified weed-free native seed mixes approved by the BLM Carlsbad Field Office that are compatible with wildlife habitat requirements and the project area's current land use of rangeland.

CONCLUSIONS

The proposed Hawk 9 G Federal 23 project would have no effect on federal or state listed threatened or endangered plant species. In addition, no critical habitat occurs within or near the proposed project and the proposed project would not modify existing or proposed critical habitat. Therefore, no USFWS consultation is necessary for this project.

Report Preparer and Certification

The results and conclusions contained in this report represent my best professional judgment and are based on actual field examinations as conducted by myself and Geoff Carpenter, information provided by the project proponent, applicable agencies, and other sources.



Signature of Author:

Robyn W. Tierney

July 21, 2016

Permits West, Inc.

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Appendix D – Wildlife Survey Report



Lime Rock Resources II-A, L.P.

Proposed Hawk 9 G Federal 23 Well, Access Road, Surface Flow Lines, and Overhead Power Line SW/NE, Section 9, Township 18 South, Range 27 East, Eddy County, New Mexico

Threatened, Endangered, and Special Status Wildlife Species Report

Prepared by Charles Black, Permits West, Inc., Santa Fe, New Mexico

July 21, 2016

INTRODUCTION

Lime Rock Resources II-A, L.P. (Lime Rock) has filed an Application to Drill (APD) one vertical well (Hawk 9 G Federal 23) and install an access road. Lime Rock has also filed an application to construct 3,567.85 feet of new surface three-inch O.D. SDR 7 poly flow lines (1 gas and 1 production) in a 30-foot wide ROW corridor extending from the proposed Hawk 9 G Federal 23 well to the existing Hawk 9 Federal tank battery, and 843.64 feet of overhead power line from the northwestern corner of the proposed well pad to an electric power line tie in.

The proposed project is located on BLM lands (Lease No. NMNM 025604) in the SW/4 NE/4, Section 9, Township 18 South, Range 27 East, Eddy County, New Mexico (Spring Lake, NM, 7.5 minute USGS quadrangle), approximately eight miles southeast of Artesia, New Mexico.

This wildlife survey report discusses the potential effects of approving the Application for Permit to Drill and right-of-way application for the surface pipeline and the overhead power line to federal listed wildlife species and designated critical habitats that may occur within Eddy County and are protected under the Endangered Species Act (ESA, 16 USC 1531 et seq.), the Migratory Bird Treaty Act of 1918 (MBTA; 16 U.S.C. 703-712), and the Bald and Golden Eagle Protection Act of 1940 (BGEPA; 16 U.S.C. 668-668c).

METHODS

Prior to the field surveys, the following databases were reviewed:

- U.S. Fish and Wildlife Service (USFWS IPaC 2016) *Listed and Sensitive Species in Eddy County* (downloaded and reviewed July 11, 2016)

- New Mexico Department of Game and Fish *Biota Information System of New Mexico* (BISON-M), 2016. *Threatened, Endangered, and Sensitive Wildlife Species for Eddy County, New Mexico* (downloaded and reviewed July 11, 2016)

On April 29 and July 12, 2016, Wildlife Biologist Charles Black conducted a pedestrian survey of the project area to inspect for the potential presence of threatened, endangered, or special status species. Weather during the survey in April was clear and breezy, with daytime highs around 75 °F. Weather during the survey in July was clear with daytime highs around 100 °F.

The surveyed area consisted of evaluating the well pad and a 50-foot buffer around the proposed pad and access road, proposed pipeline corridor, and proposed overhead power line corridor. A 0.5-mile radius around the project area also was surveyed for raptor nests by the surveyor using 10 X 40 binoculars.

Description of Existing Habitat

The project area is located between Logan Draw to the northeast and Scoggin Draw to the south. The terrain at the site is moderately sloped with slopes trending from east to west and sharply breaking above a tributary to Scoggin Draw. Most of the ground surface along the west edge of the project area has been bladed or disturbed. The area to the west of the proposed well site has been disturbed by the development of other wells and by grazing and vegetation is sparse. The project area is located approximately three miles east of the Pecos River floodplain at an elevation of 3,518 feet. No effect to the Pecos River floodplain is anticipated from the proposed project.

Vegetation is dominated by degraded Chihuahuan desert shrubland and gypsum-badlands. Some small shrubs are present. Dominant shrubs included creosote bush (*Larrea tridentata*) and coldenia (*Tiquilia hispidissima*). The site is sparsely vegetated. Grass cover is approximately 20%. Wildlife occurring in the area is typical of degraded, brush encroached grasslands and scrublands of the Chihuahuan Desert. This includes passerines such as Black-throated sparrows (*Amphispiza bileanata*), Brewer’s sparrows (*Spizella breweri*), as well as jackrabbits (*Lepus spp.*), and whiptail lizards (*Cnemidophorus spp.*).

**Threatened, Endangered, and Special Status Wildlife Species
Federal Endangered, Threatened and Special Status Species**

The following table (Table 1) discusses Federal and State of New Mexico Endangered, Threatened species of Eddy County with the potential to occur at or near the project area.

Species	Status	Habitat	Potential to Occur in Project Area*
Northern Aplomado Falcon (<i>Falco femoralis septentrionalis</i>)	Federal Endangered /Experimental Population	Formerly a resident in Chihuahuan Desert grasslands, now rare. An experimental reintroduction program is being conducted in Sierra	NP-see discussion

		County, New Mexico	
Lesser Prairie- Chicken (<i>Thympanuchus pallidicinctus</i>)	USFWS Threatened	This species is obligate to shinnery oak (<i>Quercus harvardii</i>) stands in sand dunes	NP-see discussion
Sprague's pipit (<i>Anthus spragueii</i>)	Federal Candidate	Migrates and occasionally overwinters in grassland areas of southeastern New Mexico.	NS-See discussion

***Potential to Occur in Project Area**

K - Known, documented observation within project area

S - Habitat suitable and species suspected to occur within the project area

NS - Habitat suitable but species is not suspected to occur within the project area

NP - Habitat not present and species unlikely to occur within the project area

State of New Mexico, Threatened and Special Status Species

Table 2, below, discusses State Threatened and special status species of Eddy County with the potential to occur at or near the project area.

Species	Status	Habitat	Potential to Occur in Project Area*
Baird's sparrow (<i>Ammodrammus bairdi</i>)	NM State Threatened	Migrates and occasionally overwinters in grassland areas of southeastern New Mexico	NS-See discussion
Loggerhead shrike (<i>Lanius ludovicianus</i>)	NM State Sensitive taxa	Widespread; occurs within Chihuahuan Desert shrublands	S-See discussion
Dune Sagebrush Lizard (<i>Sceloporus arenicolus</i>)	NM State Threatened	Occurs only the shinnery /sand dune habitats, generally requires deep dune fields	NP-See discussion
Swift fox (<i>Vulpes velox</i>)	NM State Sensitive taxa	Occurs in mesa country and grasslands of NE New Mexico	S-See discussion

***Potential to Occur in Project Area**

K - Known, documented observation within project area

S - Habitat suitable and species suspected to occur within the project area

NS - Habitat suitable but species is not suspected to occur within the project area

NP - Habitat not present and species unlikely to occur within the project area

DISCUSSION

Northern Aplomado Falcon

This raptor was formerly a resident in Chihuahuan Desert grasslands of southern New Mexico. It is currently very rare in terms of its natural occurrence. A reintroduction of this species occurred in 2005 at the Armendariz Ranch in Sierra County, New Mexico. The release site is approximately 150 miles to the west of the proposed well site. Historic populations of this species required large expanses of continuous desert grasslands with large stands of fire-resistant yucca for nest sites. Grassland habitat at

the proposed site is far too degraded to provide suitable falcon habitat and sufficiently sized yucca stands are entirely lacking.

Lesser Prairie Chicken

This species requires monotypic stands of shinnery oak in sand dune habitat. In recent decades, this vegetation type has receded in southern Lea and Eddy counties due to widespread fragmentation and desertification. Based on this wildlife survey, the habitat at the site is not suitable for Prairie chickens.

Sprague's Pipit

This grassland passerine migrates through grassland areas of eastern New Mexico where it occasionally overwinters. Pipits typically migrate through southeastern New Mexico in March and April (spring), and August-early September (fall). It could potentially occur in the project area, although the habitat in the area is marginal. On April 5, 2016, the USFWS issued a proposed rule to remove the Sprague's pipit from candidate status (Federal Register, April 5, 2016). Given the rarity of the species, and the small size of the proposed disturbance, this species should not be adversely impacted by the proposed project.

Baird's Sparrow

This grassland sparrow migrates through grassland areas in eastern New Mexico. It could potentially occur in the project area, although the habitat within the project area is marginal. Baird's sparrows are rare, but scarcity of credible reports may be due to the furtive nature of the species. Baird's Sparrows migrate through southeastern New Mexico in March and April (spring), and August-early September (fall). Given the rarity of the species, and the small size of the proposed disturbance, this species should not be adversely impacted by the proposed project.

Loggerhead Shrike

This species is widespread and common throughout Chihuahuan desert shrublands of southeastern New Mexico. Given the common occurrence of the species, and the small size of the proposed disturbance, this species should not be adversely impacted by the proposed project.

Dune Sagebrush Lizard

This species generally requires deep sand dunes within the shinnery oak community. Based on this wildlife survey, the habitat present at the site is not suitable for lizards, as there are no dunes or stands of shinnery oak in the project area. Given the unsuitable habitat and the small size of the proposed disturbance, this species should not be adversely impacted by the proposed project.

Swift Fox

This species could potentially occur in the project area. No potential fox burrows were observed in the project area. Given the small size of the proposed disturbance, this species should not be adversely impacted by the proposed project.

Wildlife Species Observed on April 29 and July 12, 2016

Avian Species

Scaled quail (*Callipepla squamata*)
Chihuahuan raven (*Corvus cryptoleucus*)
Northern mockingbird (*Mimus polyglottus*)
Western kingbird (*Tyrannus verticalus*)

Mammalian species

Coyote (*Canis latrans*)
Desert cottontail (*Sylvilagus audubonii*)
Black-tailed jackrabbit (*Lepus californicus*)
Kangaroo rat (*Dipodomys* sp.)
Ground squirrel (*Spermophilus* sp.)

Mammalian observations were generally made from tracks, scat, burrows, and other sign.

Reptilian species

Whiptail lizard (*Cnemidophorus* spp.)

RECOMMENDATIONS

There are no recommendations regarding wildlife in association with the proposed project.

REFERENCES

Federal Register. April 5, 2016.

“Endangered and Threatened Wildlife and Plants; 12-Month Findings on Petitions To List Island Marble Butterfly, San Bernardino Flying Squirrel, Spotless Crake, and Sprague’s Pipit as Endangered or Threatened Species; A Proposed Rule by the Fish and Wildlife Service,” 81 Federal Register 19527 (5 April 2016), pp. 19527-19542.

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