

Devon Energy Center 333 West Sheridan Avenue Oklahoma City, Oklahoma 73102-5015

# Hydrogen Sulfide (H<sub>2</sub>S) Contingency Plan

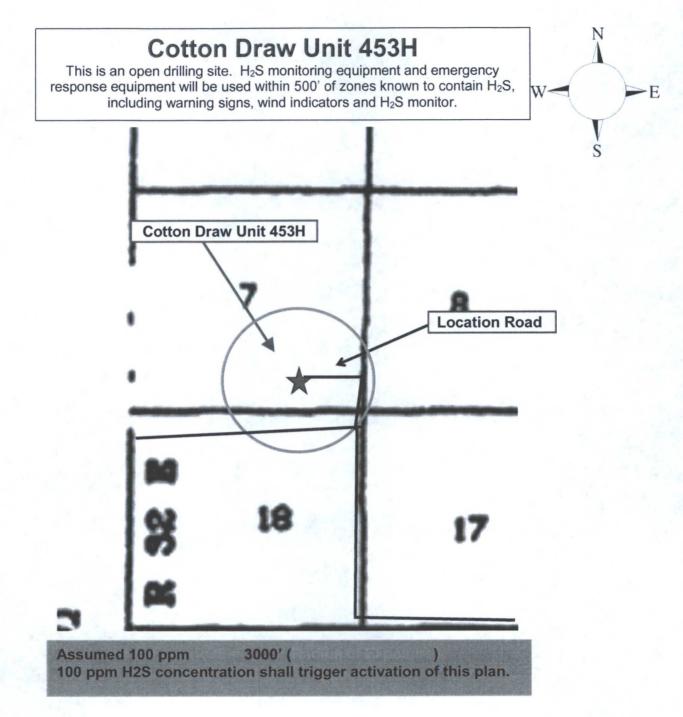
# For

**Cotton Draw Unit 453H** 

Sec-7 T-25S R-32E 599' FSL & 1225' FEL LAT = 32.1392220' N (NAD83) LONG = 103.7097821' W

Lea County NM

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# Escape

Crews shall escape upwind of escaping gas in the event of an emergency release of gas. Escape can be facilitated from the location entrance road. Crews should then block the entrance to the location from the lease road so as not to allow anyone traversing into a hazardous area. The blockade should be at a safe distance outside of the ROE. <u>There are no homes or buildings in or near the ROE</u>.

# Assumed 100 ppm ROE = 3000'

# 100 ppm H<sub>2</sub>S concentration shall trigger activation of this plan.

# Emergency Procedures

In the event of a release of gas containing H<sub>2</sub>S, the first responder(s) must

- Isolate the area and prevent entry by other persons into the 100 ppm ROE.
- Evacuate any public places encompassed by the 100 ppm ROE.
- Be equipped with H<sub>2</sub>S monitors and air packs in order to control the release.
- Use the "buddy system" to ensure no injuries occur during the response
- Take precautions to avoid personal injury during this operation.
- Contact operator and/or local officials to aid in operation. See list of phone numbers attached.
- Have received training in the
  - Detection of H<sub>2</sub>S, and
  - Measures for protection against the gas,
  - Equipment used for protection and emergency response.

# Ignition of Gas Source

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO<sub>2</sub>). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas

Common	Chemical	Specific	Threshold	Hazardous	Lethal
Name	Formula	Gravity	Limit	Limit	Concentration
Hydrogen Sulfide	H <sub>2</sub> S	1.189 Air = 1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO <sub>2</sub>	2.21 Air = 1	2 ppm	N/A	1000 ppm

# Characteristics of H<sub>2</sub>S and SO<sub>2</sub>

# **Contacting Authorities**

Devon Energy Corp. personnel must liaison with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available. The following call list of essential and potential responders has been prepared for use during a release. Devon Energy Corp. Company response must be in coordination with the State of New Mexico's 'Hazardous Materials Emergency Response Plan' (HMER)

# Hydrogen Sulfide Drilling Operation Plan

# I. HYDROGEN SULFIDE (H<sub>2</sub>S) TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

- 1. The hazards and characteristics of hydrogen sulfide (H<sub>2</sub>S)
- 2. The proper use and maintenance of personal protective equipment and life support systems.
- 3. The proper use of H<sub>2</sub>S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
- 4. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

- The effects of H<sub>2</sub>S metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
- 2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
- 3. The contents and requirements of the H<sub>2</sub>S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable  $H_2S$  zone (within 3 days or 500 feet) and weekly  $H_2S$  and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific  $H_2S$  Drilling Operations Plan and the Public Protection Plan.

# II. HYDROGEN SULFIDE TRAINING

Note: All  $H_2S$  safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonably expected to contain  $H_2S$ .

# 1. Well Control Equipment

- A. Flare line
- B. Choke manifold Remotely Operated
- C. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit
- D. Auxiliary equipment may include if applicable: annular preventer and rotating head.
- E. Mud/Gas Separator

#### 2. Protective equipment for essential personnel:

30-minute SCBA units located at briefing areas, as indicated on well site diagram, with one escape unit available in the top doghouse. As it may be difficult to communicate audibly while wearing these units, hand signals shall be utilized.

#### 3. H<sub>2</sub>S detection and monitoring equipment:

Portable H<sub>2</sub>S monitors positioned on location for best coverage and response. These units have warning lights which activate when H<sub>2</sub>S levels reach 10 ppm and audible sirens which activate at 10 ppm. Sensor locations:

- Bell nipple
- Shale shaker
   Trip tank
- Suction pit
- Rig floor
- Cellar

- Choke manifold
- Living Quarters (usually the company man's trailer stairs.)

#### Visual warning systems:

- A. Wind direction indicators as shown on well site diagram
- B. Caution/ Danger signs shall be posted on roads providing direct access to locations. Signs will be painted a high visibility yellow with black lettering of sufficient size to be reasonable distance from the immediate location. Bilingual signs will be used when appropriate.

# 4. Mud program:

The mud program has been designed to minimize the volume of H<sub>2</sub>S circulated to surface. Proper mud weight, safe drilling practices and the use of H<sub>2</sub>S scavengers will minimize hazards when penetrating H<sub>2</sub>S bearing zones.

# 5. Metallurgy:

- A. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold lines, and valves shall be H<sub>2</sub>S trim.
- B. All elastomers used for packing and seals shall be H<sub>2</sub>S trim.

#### 6. Communication:

- A. Company personnel have/use cellular telephones in the field.
- B. Land line (telephone) communications at Office

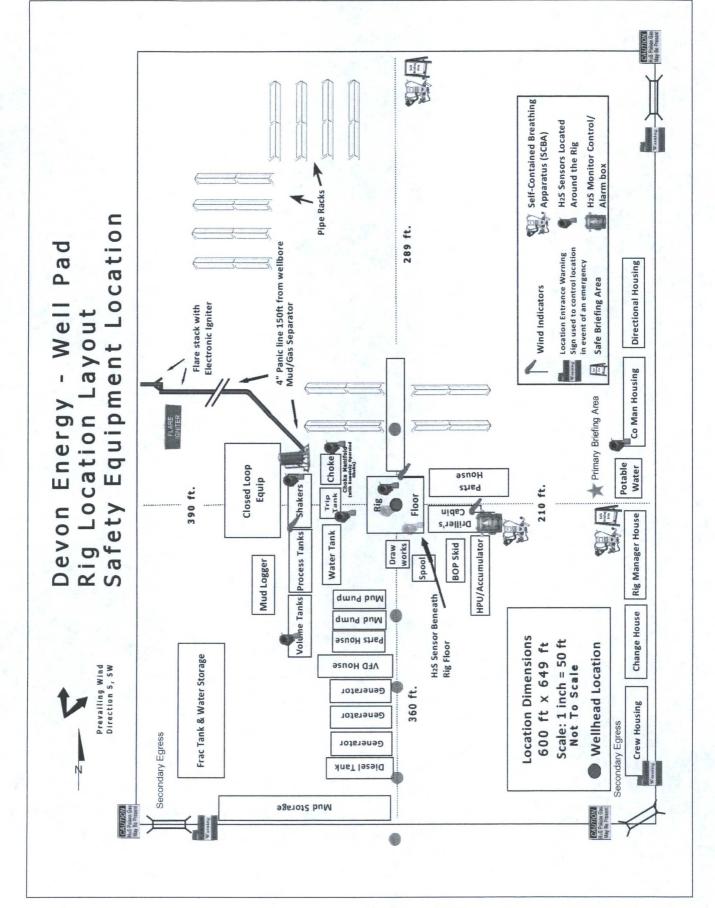
# 7. Well testing:

- A. Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safety and adequately conduct the test. The drill stem testing will be conducted during daylight hours and formation fluids will not be flowed to the surface. All drill-stem-testing operations conducted in an H<sub>2</sub>S environment will use the closed chamber method of testing.
- B. There will be no drill stem testing.

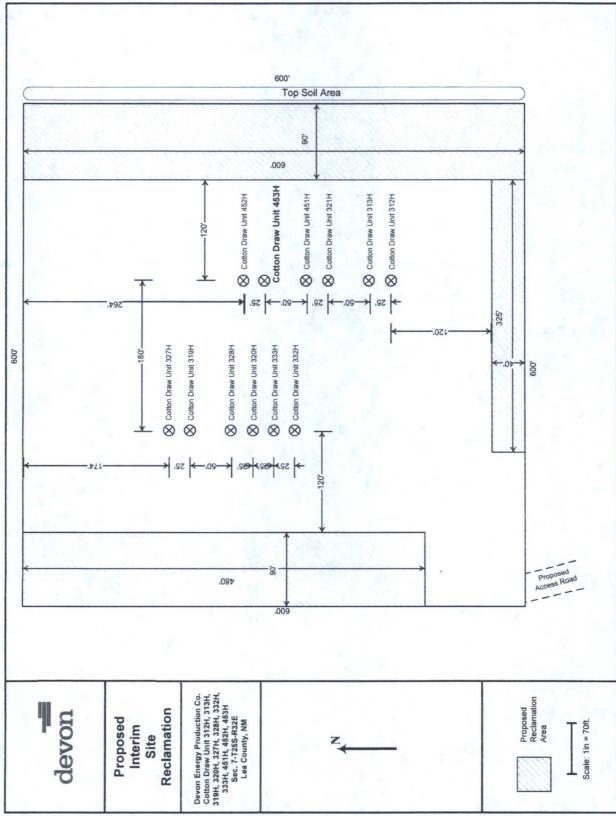
Drilling Su	405-823-4796	
Drilling Su	405-760-7234	
EHS Profe	575-513-9087	
Agency	Call List	
Lea	Hobbs	
<u>County</u> (575)	Lea County Communication Authority	393-3981
	State Police	392-5588
	City Police	397-9265
	Sheriff's Office	393-2515
111	Ambulance	911
	Fire Department	397-9308
	LEPC (Local Emergency Planning Committee)	393-2870
	NMOCD	393-6161
13	US Bureau of Land Management	393-3612
Eddy	Carlsbad	
<u>County</u> (575)	State Police	885-3137
	City Police	885-2111
	Sheriff's Office	887-7551
	Ambulance	911
	Fire Department	885-3125
	LEPC (Local Emergency Planning Committee)	887-3798
	US Bureau of Land Management	887-6544
	NM Emergency Response Commission (Santa Fe)	(505) 476-9600
	24 HR	(505) 827-9126
	National Emergency Response Center	(800) 424-8802
	National Pollution Control Center: Direct	(703) 872-6000
	For Oil Spills	(800) 280-7118
	Emergency Services	
	Wild Well Control	(281) 784-4700
	Cudd Pressure Control (915) 699-0139	(915) 563-3356
	Halliburton	(575) 746-2757
	B. J. Services	(575) 746-3569
Give GPS position:	Native Air – Emergency Helicopter – Hobbs	(575) 392-6429
	Flight For Life - Lubbock, TX	(806) 743-9911
	Aerocare - Lubbock, TX	(806) 747-8923
	Med Flight Air Amb - Albuquerque, NM	(575) 842-4433
	Lifeguard Air Med Svc. Albuquerque, NM	(800) 222-1222
	Poison Control (24/7)	(575) 272-3115
	Oil & Gas Pipeline 24 Hour Service	(800) 364-4366
	NOAA – Website - www.nhc.noaa.gov	14

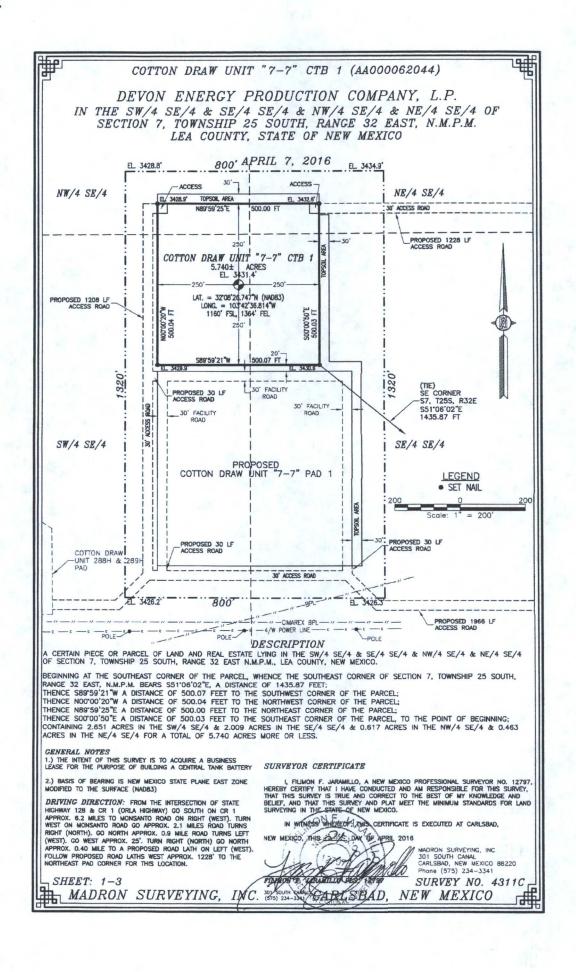
Prepared in conjunction with Dave Small

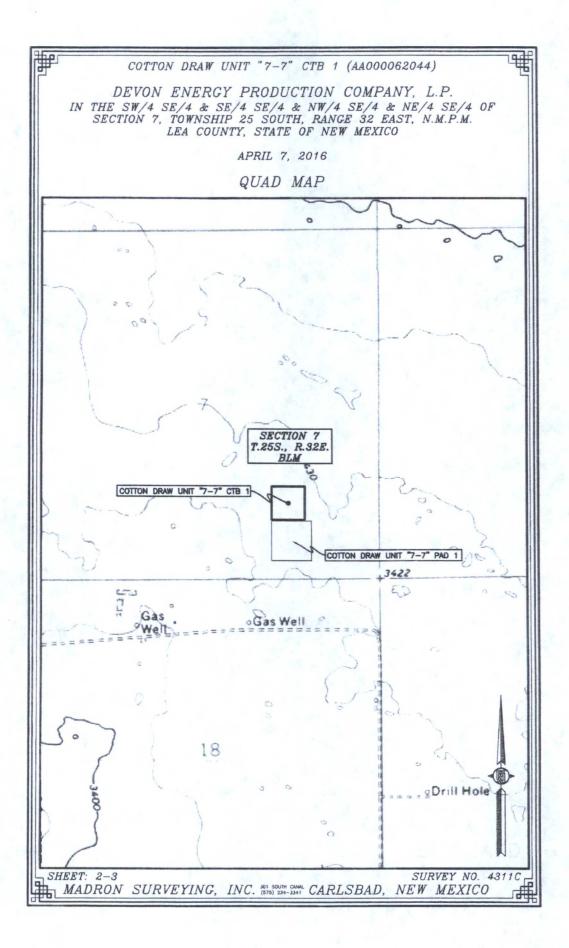


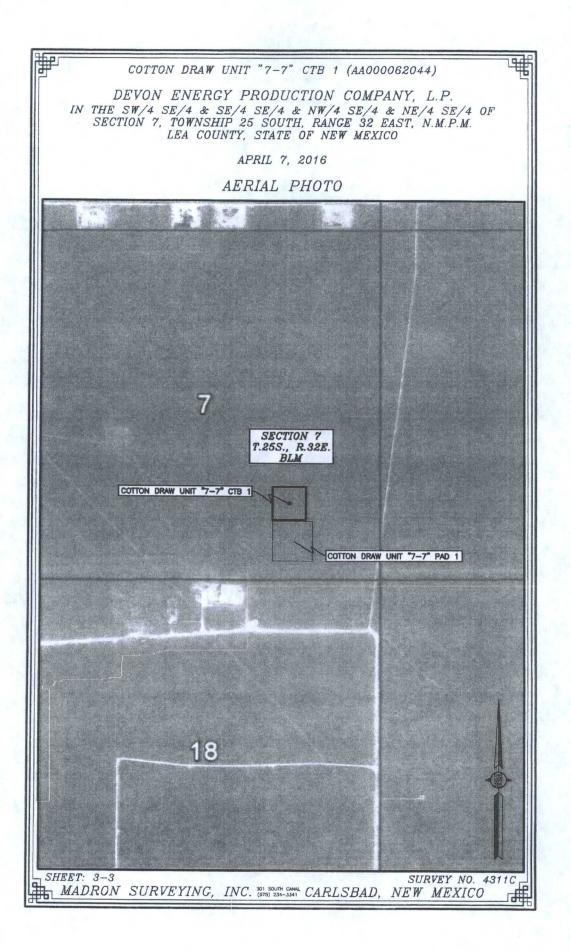


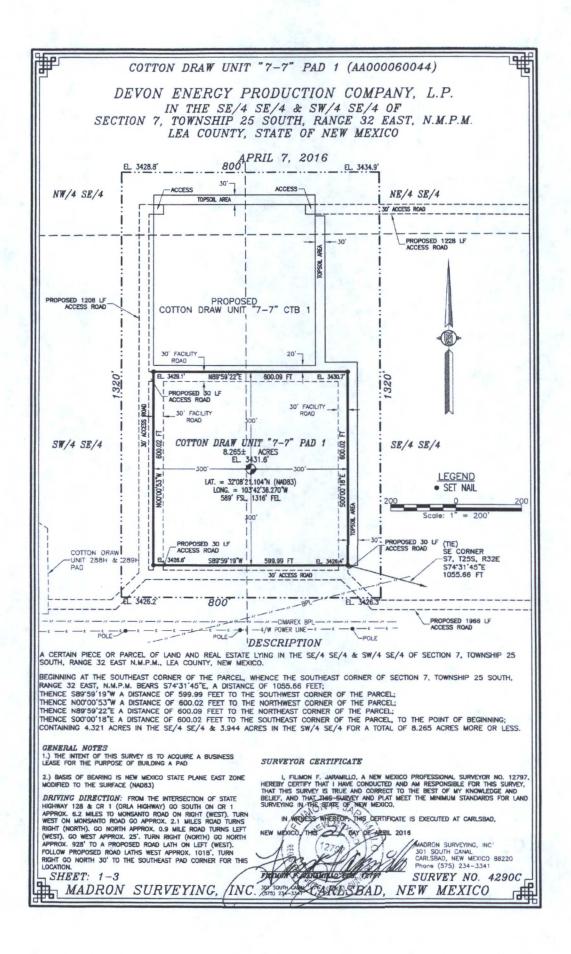
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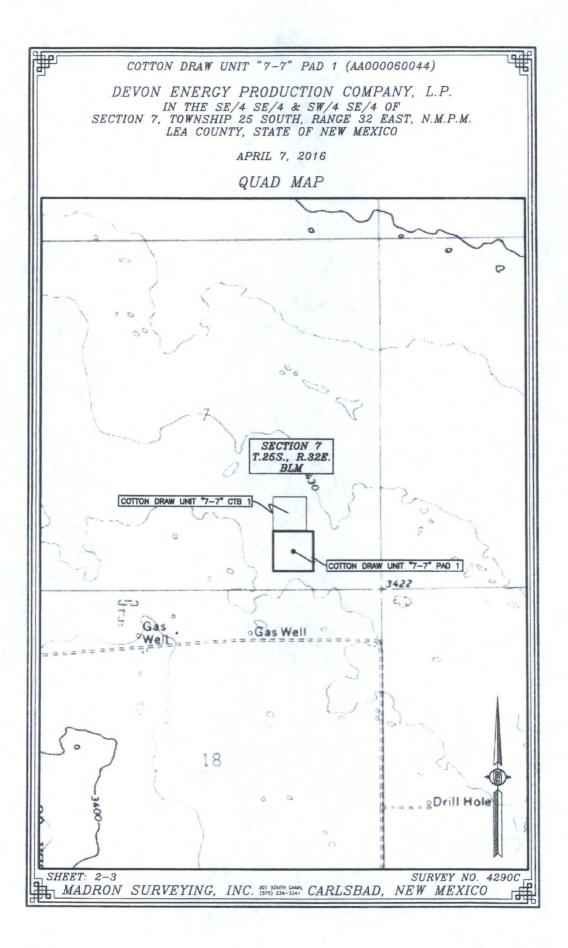


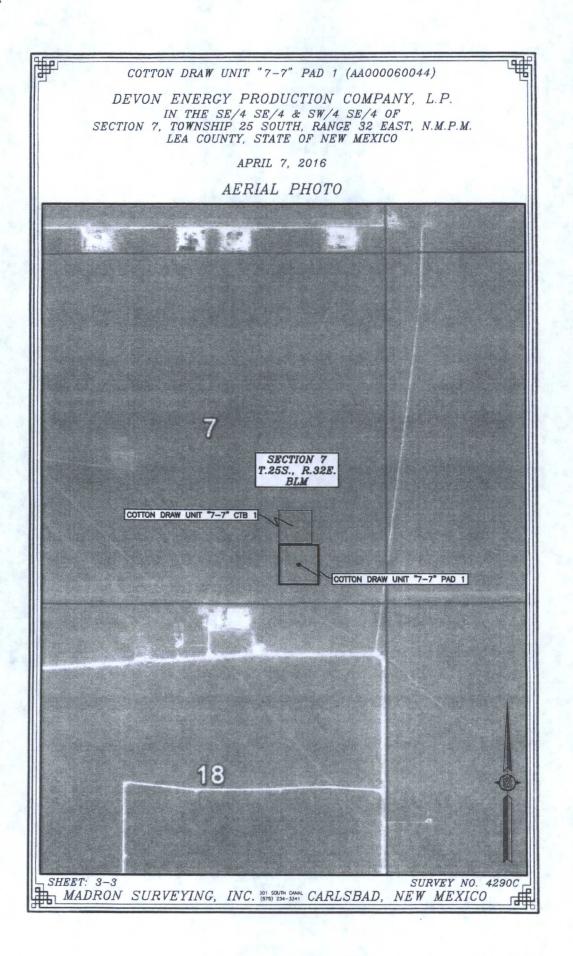


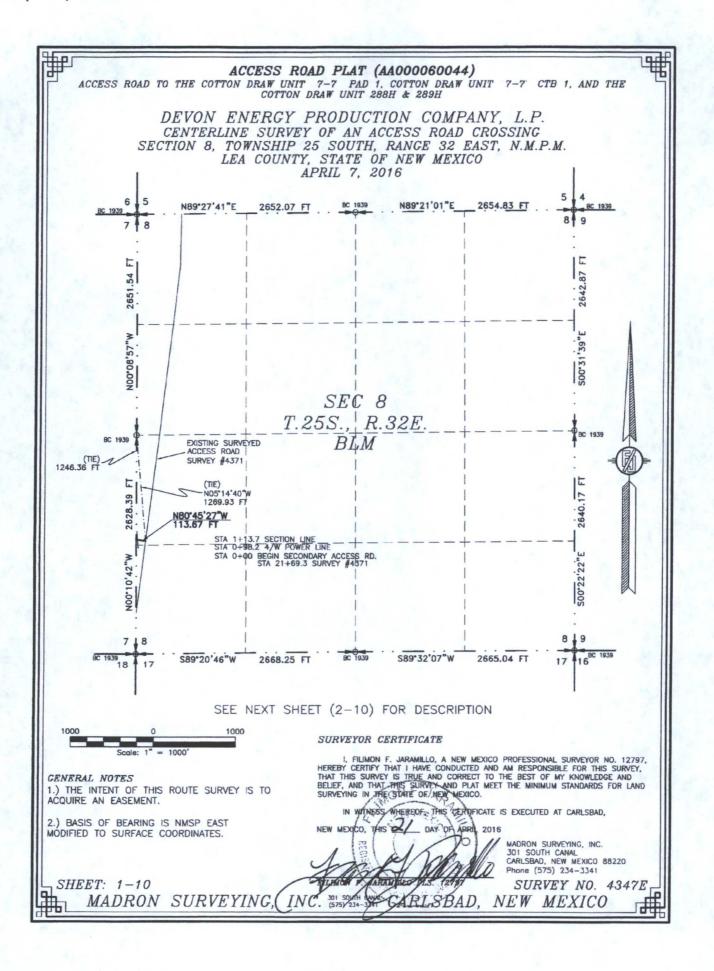




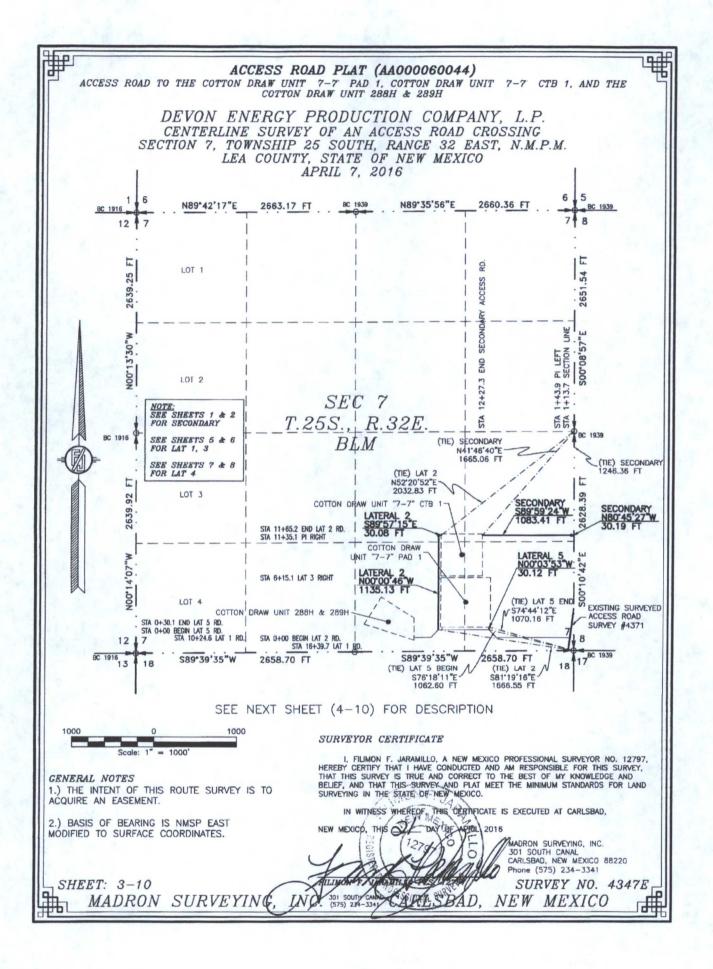


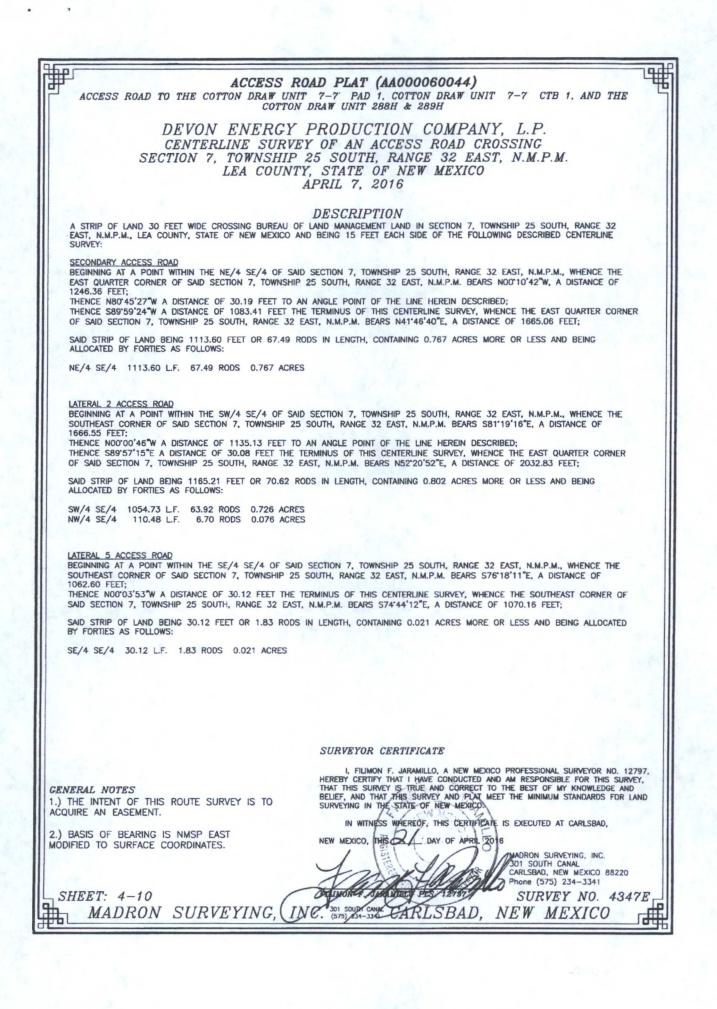


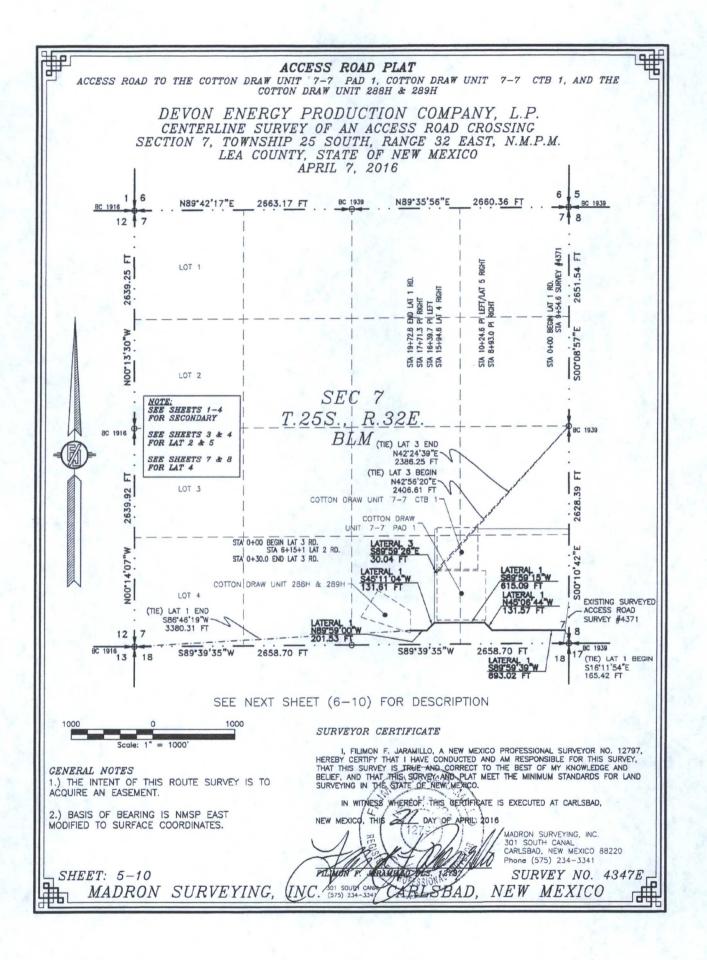




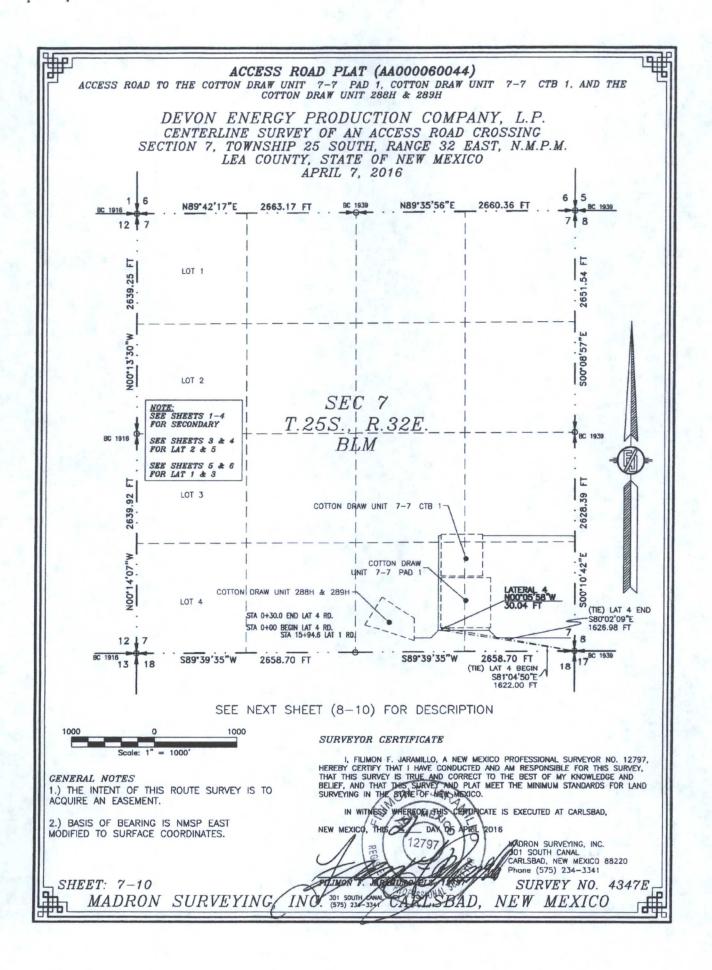
9 PI ACCESS ROAD PLAT (AA000060044) ACCESS ROAD TO THE COTTON DRAW UNIT 7-7 PAD 1, COTTON DRAW UNIT 7-7 CTB 1, AND THE COTTON DRAW UNIT 288H & 289H DEVON ENERGY PRODUCTION COMPANY, L.P. CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING SECTION 8, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M. LEA COUNTY, STATE OF NEW MEXICO APRIL 7, 2016 DESCRIPTION A STRIP OF LAND 30 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 8, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M., LEA 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 SW/4 OF SAID SECTION 8, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M., WHENCE THE WEST QUARTER CORNER OF SAID SECTION B, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M. BEARS NO5'14'40"W, A DISTANCE OF 1269.93 FEET; THENCE N80'45'27"W A DISTANCE OF 113.67 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE WEST QUARTER CORNER OF SAID SECTION 8, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M. BEARS NO0'10'42"W, A DISTANCE OF 1246.36 FEET; SAID STRIP OF LAND BEING 113.67 FEET OR 6.89 RODS IN LENGTH, CONTAINING 0.078 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS: NW/4 SW/4 113.67 L.F. 6.89 RODS 0.078 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 INEW MERCO. GENERAL NOTES 1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT. IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, 2.) BASIS OF BEARING IS NMSP EAST NEW MEXICO, THIS DAY OF APRIL 2016 MODIFIED TO SURFACE COORDINATES. MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO 88220 Phone (575) 234-3341 ET: 2-10 MADRON SURVEYING, INC. South Content CARLSBAD, SHEET: 2-10 SURVEY NO. 4347E 9 NEW MEXICO

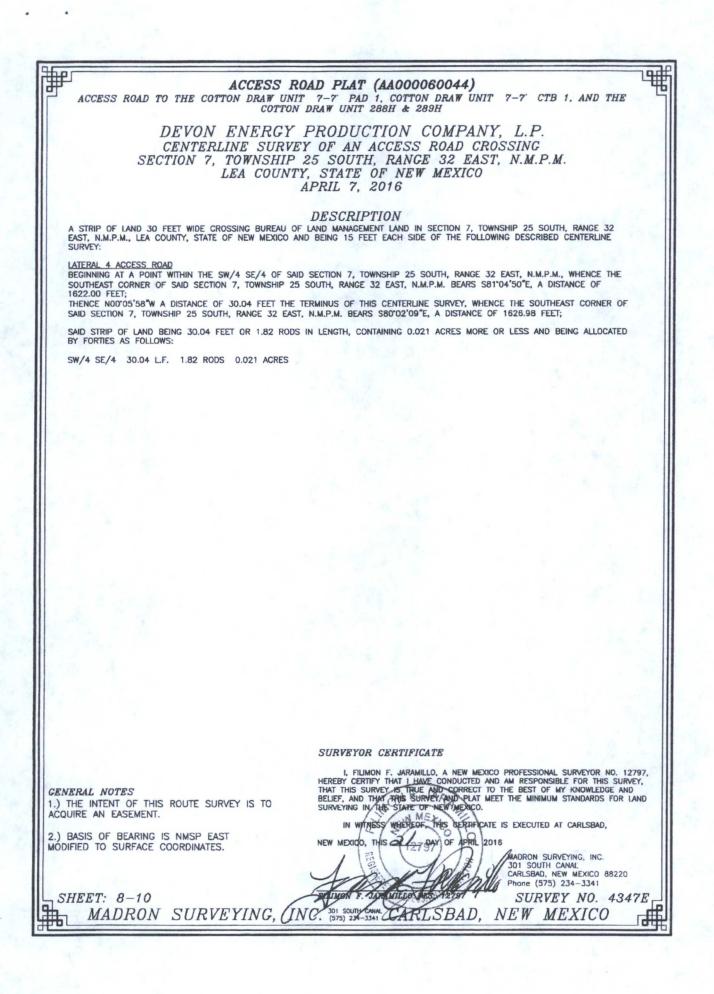


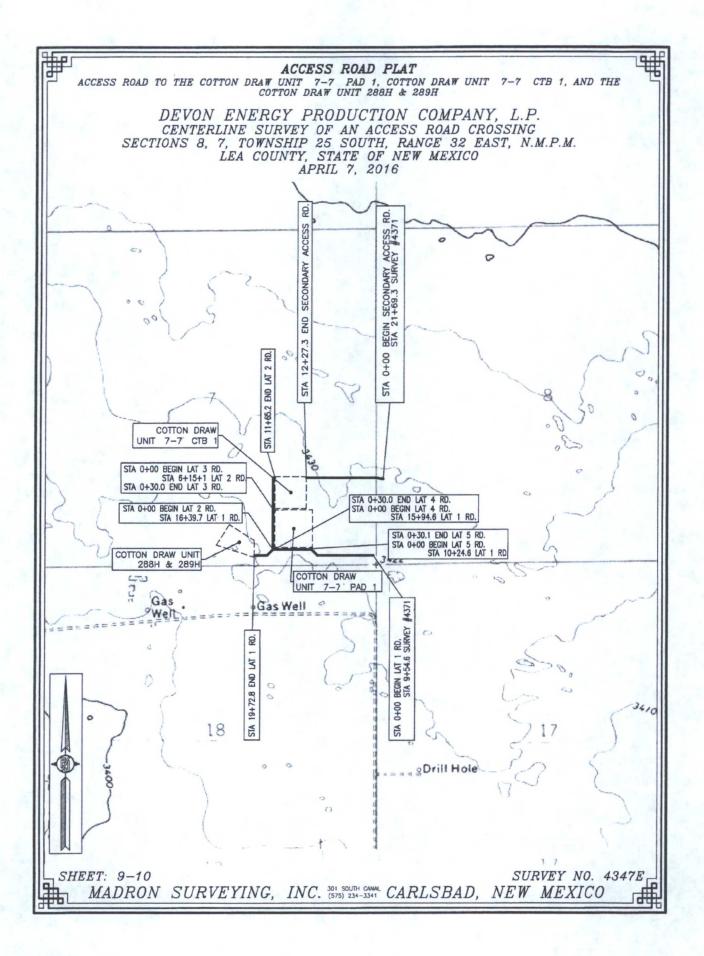


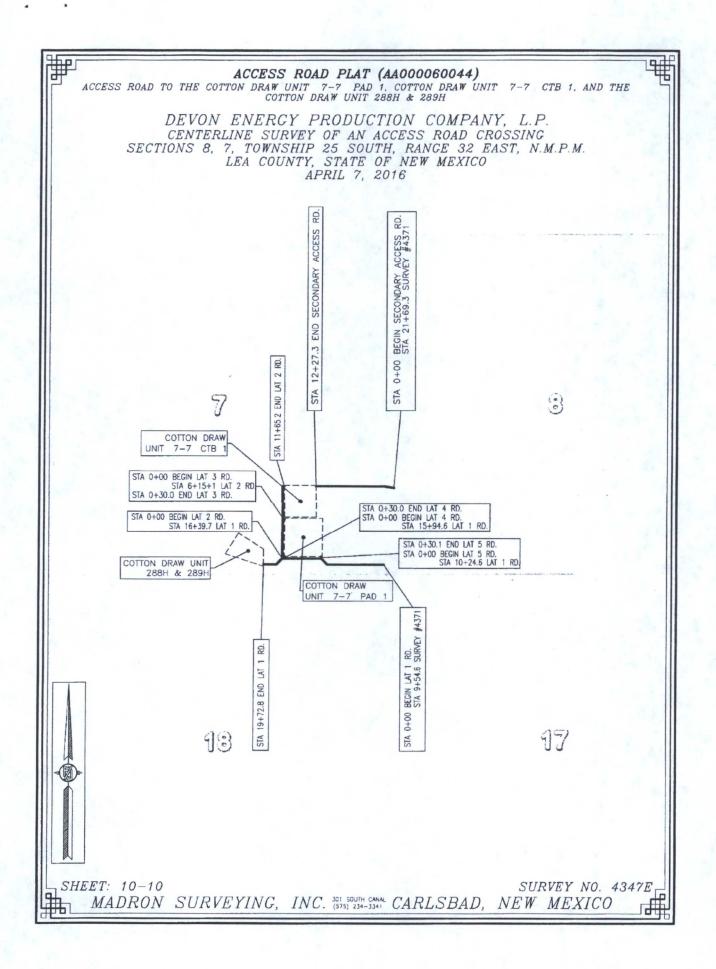


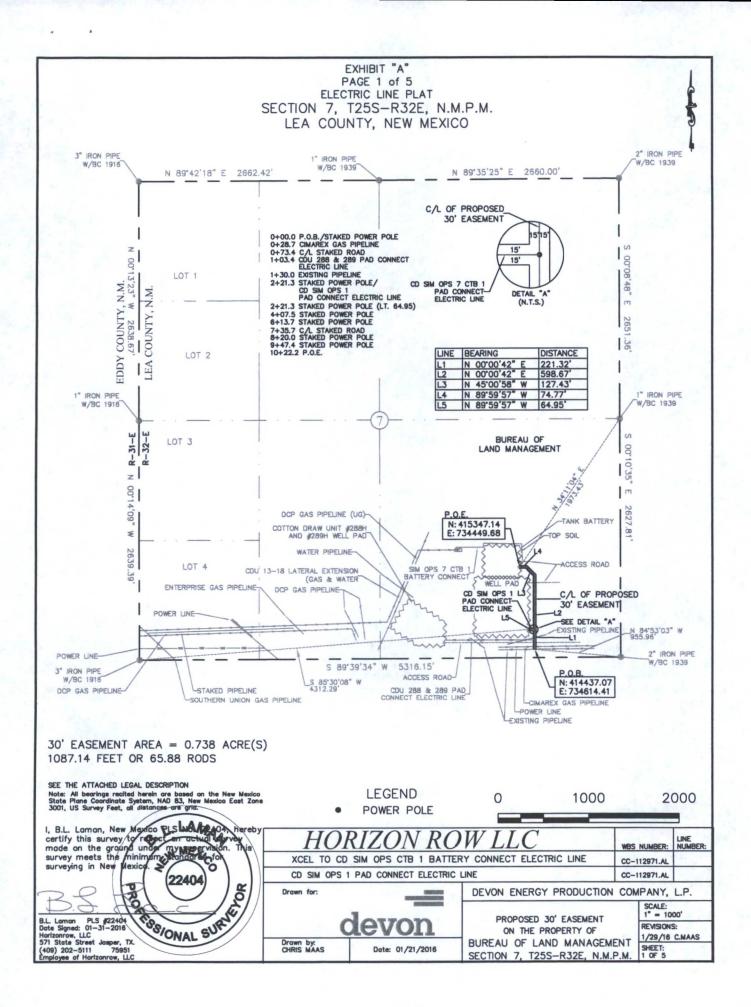
HP 9# ACCESS ROAD PLAT (AA000060044) ACCESS ROAD TO THE COTTON DRAW UNIT 7-7 PAD 1, COTTON DRAW UNIT 7-7 CTB 1, AND THE COTTON DRAW UNIT 288H & 289H DEVON ENERGY PRODUCTION COMPANY, L.P. CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING SECTION 7, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M. LEA COUNTY, STATE OF NEW MEXICO APRIL 7, 2016 DESCRIPTION A STRIP OF LAND 30 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 7, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY, STATE OF NEW MEXICO AND BEING 15 FEET EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY: LATERAL 1 ACCESS ROAD BEGINNING AT A POINT WITHIN THE SE/4 SE/4 OF SAID SECTION 7, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M., WHENCE THE SOUTHEAST CORNER OF SAID SECTION 7, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M. BEARS S16'11'54"E, A DISTANCE OF 165.42 FEET; THENCE \$89'59'39"W A DISTANCE OF 893.02 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED; THENCE N45'06'44'W A DISTANCE OF 131.57 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED; THENCE S89'59'15''W A DISTANCE OF 615.09 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED; THENCE S45'11'04'W A DISTANCE OF 131.61 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED; THENCE N89'59'00'W A DISTANCE OF 201.53 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE SOUTHWEST CORNER OF SAID SECTION 7, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M. BEARS S86'46'19"W, A DISTANCE OF 3380.31 FEET; SAID STRIP OF LAND BEING 1972.82 FEET OR 119.56 RODS IN LENGTH, CONTAINING 1.359 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS: SE/4 SE/4 1322.35 L.F. 80.14 RODS 0.911 ACRES SW/4 SE/4 650.47 L.F. 39.42 RODS 0.448 ACRES LATERAL 3 ACCESS ROAD BEGINNING AT A POINT WITHIN THE SW/4 SE/4 OF SAID SECTION 7, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M., WHENCE THE EAST QUARTER CORNER OF SAID SECTION 7, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M. BEARS N42'56'20"E, A DISTANCE OF 2406.61 FEET; THENCE S89'59'26"E A DISTANCE OF 30.04 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE EAST QUARTER CORNER OF SAID SECTION 7, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M. BEARS N42'24'39"E, A DISTANCE OF 2386.25 FEET; SAID STRIP OF LAND BEING 30.04 FEET OR 1.82 RODS IN LENGTH, CONTAINING 0.021 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS: SW/4 SE/4 30.04 L.F. 1.82 RODS 0.021 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 TREW MEXICO. **GENERAL NOTES** 1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT. WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, IN WITNESS THIS 21 2.) BASIS OF BEARING IS NMSP EAST DAY OF APRIL 2016 NEW MEXICO. MODIFIED TO SURFACE COORDINATES. ADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD NEW MEXICO 88220 SHEET: 6-10 Phone (575) 234-3341 MIMONG VI. JAR MILT SURVEY NO. 4347E MADRON SURVEYING INC. 301 SOUTH CHINA CARLSBAD NEW MEXICO











# SECTION 7, T25S-R32E, N.M.P.M., LEA COUNTY, NEW MEXICO

# ELECTRIC LINE PLAT

# LEGAL DESCRIPTION

# FOR

#### **DEVON ENERGY PRODUCTION COMPANY, L.P.**

#### **BUREAU OF LAND MANAGEMENT**

#### **30' EASEMENT DESCRIPTION:**

**BEING** an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the southeast quarter (SE <sup>1</sup>/<sub>4</sub>) of Section 7, Township 25 South, Range 32 East, N.M.P.M., Lea County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 2" iron pipe w/ BC1939 found for the southeast corner of Section 7, T25S-R32E, N.M.P.M., Lea County, New Mexico;

Thence N 84°53'03" W a distance of 955.96' to the **Point of Beginning** of this easement having coordinates of Northing=414437.07, Easting=734614.41 feet and continuing the following courses;

Thence N 00°00'42" E a distance of 221.32' to the first point of intersection;

Thence N 89°59'57" W a distance of 64.95' to a point of termination of a portion of this easement in the southeast quarter of Section 7, T25S-R32E, N.M.P.M., where a 3" iron pipe w/BC 1916 for the southwest corner of said Section 7 bears for reference S 85°30'08" W a distance of 4312.29';

Thence resuming from said first point of intersection N 00°00'42" E a distance of 598.67' to an angle point;

Thence N 45°00'58" W a distance of 127.43' to an angle point;

Thence N 89°59'57" W a distance of 74.77 to the **Point of Ending** having coordinates of Northing= 415347.14, Easting= 734449.68 feet in the southeast quarter of Section 7, T25S-R32E, N.M.P.M., Lea County, New Mexico, from said point a 1" iron pipe w/BC

1939 for the east quarter corner of Section 7, T25S-R32E, bears N 34°11'04" E a distance of 1973.43', covering **1087.14' or 65.88 rods** and having an area of **0.738 acres**.

# NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman PLS# 22404 Date Signed: 01-31-2016 Horizon Row, LLC 571 State Street Jasper, Tx (409) 202-5111 75951 Employee of Horizon Row, LLC



