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HOBBS OCD

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**Devon Energy Corporation  
20 North Broadway  
Oklahoma City, Oklahoma 73102-8260**

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

**For**

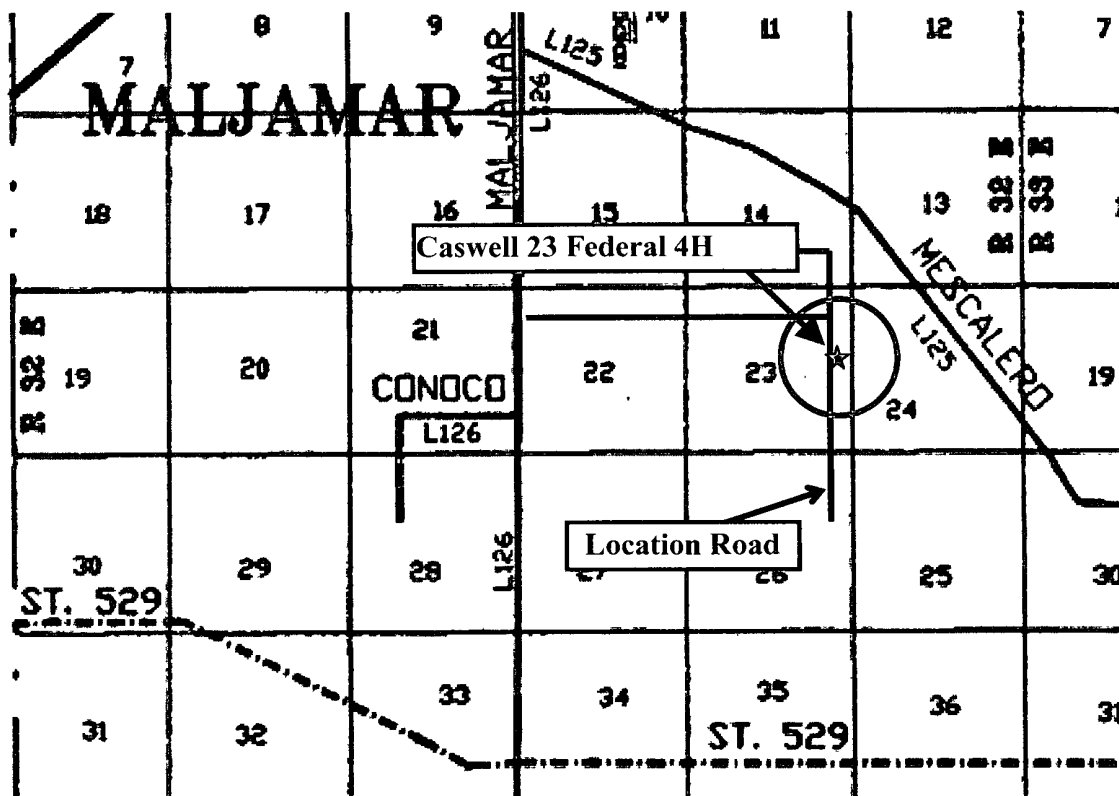
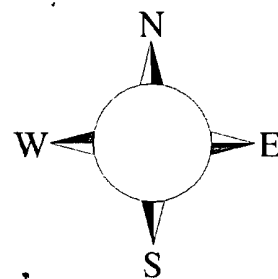
**Caswell 23 Federal 4H**

**Sec-23, T-17S R-32E  
2000' FNL & 330' FEL,  
LAT. = 32.8218118°N (NAD83)  
LONG = 103.7295595°W**

**Lea County NM**

## Caswell 23 Federal 4H

This is an open drilling site. H<sub>2</sub>S monitoring equipment and emergency response equipment will be used within 500' of zones known to contain H<sub>2</sub>S, including warning signs, wind indicators and H<sub>2</sub>S monitor.



Assumed 100 ppm H<sub>2</sub>S = 3000' (Radius of Exposure)  
 100 ppm H<sub>2</sub>S concentration shall trigger activation of this plan.

### 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, North the West on lease road or South on lease road. Crews should then block 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. There are no homes or buildings in or near the ROE. There are dwellings approximately one mile Northeast from the wellsite. Steps should be taken, in the case of a gas release, to warn and protect those properties.

**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

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

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

### **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:

1. The effects of H<sub>2</sub>S metal components. If high tensile tubular 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<sub>2</sub>S zone (within 3 days or 500 feet) and weekly H<sub>2</sub>S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H<sub>2</sub>S Drilling Operations Plan and the Public Protection Plan.

## **II. HYDROGEN SULFIDE TRAINING**

Note: All H<sub>2</sub>S 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 reasonable expected to contain H<sub>2</sub>S.

### **1. Well Control Equipment**

- A. Flare line
- B. Choke manifold
- 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.

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

- A. 30-minute SCBA units located in the doghouse and at briefing areas, as indicated on well site diagram. 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:**

- A. Portable H<sub>2</sub>S monitors positioned on location for best coverage and response. These units have warning lights and audible sirens when H<sub>2</sub>S levels of 20 PPM are reached. These units are usually capable of detecting SO<sub>2</sub>, which is a byproduct of burning H<sub>2</sub>S.

### **4. 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..

### **5. Mud program:**

- A. 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.

**6. 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.

**7. Communication:**

- A. Radio communications in company vehicles including cellular telephones and 2-way radio
- B. Land line (telephone) communications at Office

**8. 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.

## Devon Energy Corp. Company Call List

| <u>Artesia (575)</u>            | <u>Cellular</u>    | <u>Office</u>      | <u>Home</u>    |
|---------------------------------|--------------------|--------------------|----------------|
| Foreman – Robert Bell.....      | 748-7448 .....     | 748-0178 .....     | 746-2991       |
| Asst. Foreman –Tommy Polly..... | 748-5290 .....     | 748-0165 .....     | 748-2846       |
| Don Mayberry .....              | 748-5235 .....     | 748-0164 .....     | 746-4945       |
| Montral Walker.....             | 390-5182 .....     | 748-0193 .....     | 936-414-6246   |
| Engineer – Marcos Ortiz.....    | (405) 317-0666.... | (405) 552-8152.... | (405) 381-4350 |

## Agency Call List

| <u>Lea</u>    | <u>Hobbs</u>                                   |
|---------------|--|
| <u>County</u> | State Police .....                             |
| <u>(575)</u>  | City Police .....                              |
|               | Sheriff's Office.....                          |
|               | Ambulance.....                                 |
|               | Fire Department.....                           |
|               | LEPC (Local Emergency Planning Committee)..... |
|               | NMOCD .....                                    |
|               | US Bureau of Land Management .....             |

| <u>Eddy</u>   | <u>Carlsbad</u>   |
|---------------|---|
| <u>County</u> | State Police .....                                      |
| <u>(575)</u>  | City Police .....                                       |
|               | Sheriff's Office.....                                   |
|               | Ambulance.....  |
|               | Fire Department.....                                    |
|               | LEPC (Local Emergency Planning Committee).....          |
|               | US Bureau of Land Management .....                      |
|               | New Mexico Emergency Response Commission (Santa Fe) ... |
|               | 24 HR .....   |
|               | National Emergency Response Center (Washington, DC) ..  |

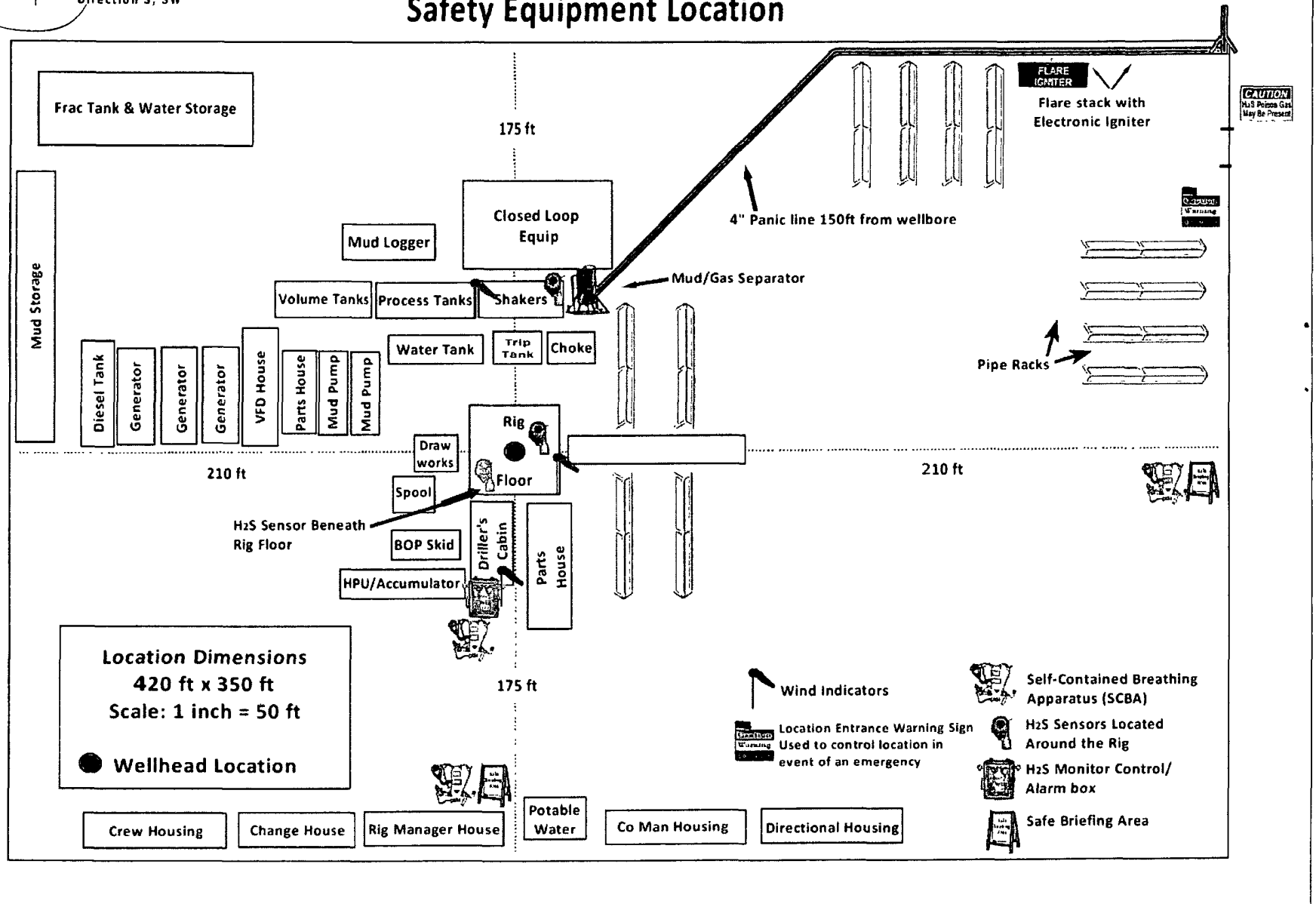
### **Emergency Services**

|                  |  |
|------------------|--|
|                  | Boots & Coots IWC .....                      |
|                  | Cudd Pressure Control.....                   |
|                  | Halliburton .....                            |
|                  | B. J. Services.....                          |
| <i>Give</i>      | Flight For Life - Lubbock, TX .....          |
| <i>GPS</i>       | Aerocare - Lubbock, TX .....                 |
| <i>position:</i> | Med Flight Air Amb - Albuquerque, NM .....   |
|                  | Lifeguard Air Med Svc. Albuquerque, NM ..... |

Prepared in conjunction with  
Wade Rohloff



# Devon Energy - Well Pad Rig Location Layout Safety Equipment Location







## Proposed Interim Site Reclamation

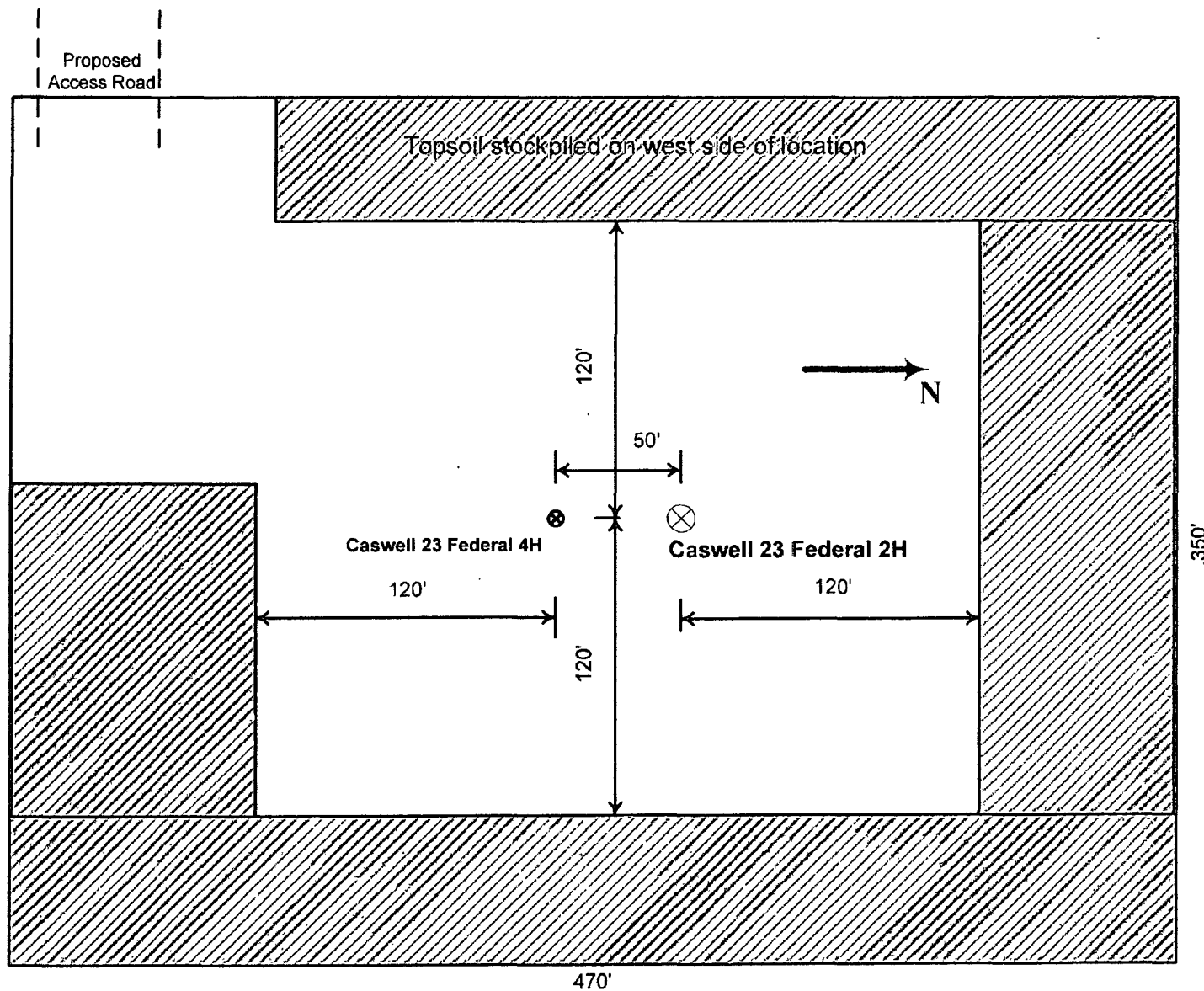
Devon Energy Production Co.  
Caswell 23 Federal 2H  
1950' FNL & 330' FEL  
Sec. 23-T17S-R32E  
Lea County, NM



Proposed  
Reclamation  
Area



Scale: 1 in = 60 ft.



Production facility to be shared with Caswell 23 Federal 1H/3H wells.