# Drilling a Helium Well

# Step by Step Process

# DESERT MOUNTAIN ENERGY CORP.

#### Well Spudding

- **1**. 17<sup>1</sup>/<sub>2</sub>" Hole drilled to 20'
- 2. 14" Diameter Steel Conductor is ran
  - 1. Conductor supports the entire weight of the well
- 3. Conductor is cemented into place

| Fresh Water    |  |
|----------------|--|
|                |  |
| Brackish Water |  |
|                |  |
|                |  |
|                |  |
|                |  |
|                |  |
|                |  |

#### Surface Casing Drill & Set

- 12¼" Hole drilled to below Fresh water zone
- 2. 9<sup>5</sup>/<sub>8</sub>" Diameter Steel Surface Casing is ran
- 3. Surface casing is cemented back to surface per state requirements
  - 1. Surface casing isolates the freshwater aquifer



#### State of Arizona Cementing <u>Requirements</u>

- 8<sup>3</sup>/<sub>4</sub>" Hole drilled to below Brackish water zone
- 2. 7" Diameter Steel Intermediate casing is ran
- Intermediate casing is cemented with 50' overlap per AZ Oil & Gas Commissions requirements
  - Intermediate casing isolates the Brackish zone & adds another layer of protection for the Aquifer



# Desert Mountain Energy Cementing Procedures

- 1. 8<sup>3</sup>/<sub>4</sub>" Hole drilled to below Brackish water zone
- 2. 7" Diameter Steel Intermediate Casing is ran
- **3.** Intermediate casing is cemented back to surface per DME requirements
  - 1. Oil & Gas Commission only requires an overlap of cement by 50' into the previous string of casing
  - 2. Intermediate casing isolates the Brackish zone & adds another layer of protection for the Aquifer



# <u>State of Arizona Cementing</u> <u>Requirements</u>

- 6<sup>1</sup>/<sub>8</sub>" Hole drilled below all possible production zones
- 2. Tools are run in the open hole to evaluate the formations & look for production zones
- 3. 4½" Diameter Steel Production Liner is run only 100' inside the previous casing string
  - 1. Oil & Gas Commission allows liners to be set with only 100' overlap the previous casing string
  - 2. Production casing adds additional protection to the brackish water & aquifer



# <u>Desert Mountain Energy</u> <u>Cementing Procedures</u>

- 6<sup>1</sup>/<sub>8</sub>" Hole drilled below all possible production zones
- 2. Tools are run in the open hole to evaluate the formations & look for production zones
- 3. 4½" Diameter Steel Production Casing is run back to surface
- 4. Production casing is cemented back to surface per DME requirements
  - 1. Production casing adds additional protection to the brackish water & aquifer





Data from logs provide information on where production zones may be

## <u>Well Completion & Pre-</u> <u>Production</u>

- Once production zones are determined the 4½" Production casing is perforated
- 2<sup>3</sup>/<sub>8</sub>" Production Tubing is run with a packer that diverts the gas up the tubing
- 3. The well is then ready to produce gas back to surface

