

**Revised Permit Information 10/8/2020:**

Well Name: Antietam 9 Fed Com #502Y

Location:

SHL: 715' FNL &amp; 1130' FWL, Section 9, T-25-S, R-33-E, Lea Co., N.M.

BHL: 2540' FNL &amp; 990' FWL, Section 16, T-25-S, R-33-E, Lea Co., N.M.

**OCD – HOBBS**  
**10/09/2020**  
**RECEIVED**

**Casing Program:**

| Hole Size | Interval          | Csg OD  | Weight | Grade   | Conn | DF <sub>min</sub> Collapse | DF <sub>min</sub> Burst | DF <sub>min</sub> Tension |
|-----------|-------------------|---------|--------|---------|------|----------------------------|-------------------------|---------------------------|
| 17.5"     | 0' – 1,240'       | 13.375" | 54.5#  | J-55    | STC  | 1.125                      | 1.25                    | 1.60                      |
| 12.25"    | 0' – 4,000'       | 9.625"  | 40#    | J-55    | LTC  | 1.125                      | 1.25                    | 1.60                      |
| 12.25"    | 4,000' – 4,865'   | 9.625"  | 40#    | HCK-55  | LTC  | 1.125                      | 1.25                    | 1.60                      |
| 8.75"     | 0' – 11,100'      | 5.5"    | 17#    | HCP-110 | LTC  | 1.125                      | 1.25                    | 1.60                      |
| 8.5"      | 11,100' – 18,304' | 5.5"    | 17#    | HCP-110 | LTC  | 1.125                      | 1.25                    | 1.60                      |

Variance is requested to waive the centralizer requirements for the 9-5/8" casing in the 12-1/4" hole size. An expansion additive will be utilized, in the cement slurry, for the entire length of the 12-1/4" hole interval to maximize cement bond and zonal isolation.

Variance is also requested to waive any centralizer requirements for the 5-1/2" casing in the 8-3/4" and 8-1/2" hole size. An expansion additive will be utilized, in the cement slurry, for the entire length of the 8-3/4" and 8-1/2" hole interval to maximize cement bond and zonal isolation.

**Cementing Program:**

| Depth   | No. Sacks | Wt. ppg | Yld Ft <sup>3</sup> /sk | Slurry Description                                                                               |
|---------|-----------|---------|-------------------------|--------------------------------------------------------------------------------------------------|
| 1,240'  | 550       | 13.5    | 1.73                    | Lead: Class C + 4.0% Bentonite + 0.5% CaCl <sub>2</sub> + 0.25 lb/sk Cello-Flake (TOC @ Surface) |
|         | 160       | 14.8    | 1.34                    | Tail: Class C + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate (TOC @ 1,040')    |
| 4,865'  | 710       | 9.0     | 3.5                     | Lead: Class C + 10% NaCl + 6% Bentonite Gel + 3% MagOx (TOC @ Surface)                           |
|         | 310       | 14.4    | 1.20                    | Tail: Class C + 10% NaCl + 3% MagOx (TOC @ 3,890')                                               |
| 18,304' | 590       | 11.0    | 3.21                    | Lead: Class C + 3% CaCl <sub>2</sub> + 3% Microbond (TOC @ 4,365')                               |
|         | 1,970     | 14.4    | 1.2                     | Tail: Class H + 0.4% Halad-344 + 0.35% HR-601 + 3% Microbond (TOC @ 10,206')                     |

| <b>Additive</b>     | <b>Purpose</b>                          |
|---------------------|-----------------------------------------|
| Bentonite Gel       | Lightweight/Lost circulation prevention |
| Calcium Chloride    | Accelerator                             |
| Cello-flake         | Lost circulation prevention             |
| Sodium Metasilicate | Accelerator                             |
| MagOx               | Expansive agent                         |
| Sodium Chloride     | Accelerator                             |
| FL-62               | Fluid loss control                      |
| Halad-344           | Fluid loss control                      |
| Halad-9             | Fluid loss control                      |
| HR-601              | Retarder                                |
| Microbond           | Expansive Agent                         |

Note: Cement volumes based on bit size plus at least 25% excess in the open hole plus 10% excess in the cased-hole overlap section.

| <b>Depth</b>     | <b>Type</b> | <b>Weight (ppg)</b> | <b>Viscosity</b> | <b>Water Loss</b> |
|------------------|-------------|---------------------|------------------|-------------------|
| 0 – 1,240'       | Fresh - Gel | 8.6-8.8             | 28-34            | N/c               |
| 1,240' – 4,865'  | Brine       | 8.6-8.8             | 28-34            | N/c               |
| 4,865' – 18,304' | Oil Base    | 8.8-9.5             | 58-68            | N/c - 6           |

720' FNL  
1196' FWL  
Section 9  
T-25-S, R-33-E

Proposed Wellbore  
Revised 10/8/2020

KB: 3,455'  
GL: 3,430'

API: 30-025-\*\*\*\*\*

