

# Additional Information

Modified Well Diagram



**WLC South Federal SWD #1**  
 Lea County, NM  
 900' FNL & 100' FEL  
 SEC. 15-T26S-R33E

AFE # - TBD  
 Drilling Contractor: McKay Drilling  
 Safety:  
 Trucking:

Directions / Vicinity  
 Site - Lat: 32.048254, Long: -103.551973  
 21.7 miles W/SW of Jal, NM  
 Drawn by B. Stone, 10/16/2019

Geologic Tops (MD)	Wellbore	Section	Issues	Bit & BHA	Mud	Casing	Logging	Cement	Injection String
Triassic - 450'		<b>SURFACE CSG</b> Drill 24" 0' - 1050' Set and Cement 20' Casing	Loss Circulation Hole Cleaning Wellbore stability in the Red Beds Anhydrite in Rustler	24" Tricone 9-5/8" x 8" MM 9 jnt - 8" DC 21 jnt - 5" HWDP 5" DP to surface	Spud Mud MW 8.5-9.2 ppg	1050' of 20" 94.0# J55 BTC Centralizers bottom 2 joints and then every 3rd jt Cement basket 5th jt from surface	No Logs	Thixotropic Cement 13.7 ppg 1600 sx Class C 3hr TT 25% Excess 1000 psi CSD after 10 hrs Circ. to Surface	12840' of 7.0" P110 26# TCPC Duoline Internally Coated Injection Tubing
Rustler - 1000' Surface CSG Depth - 1050'		<b>INTERMEDIATE CSG</b> Drill 3950' of 17-1/2" Hole 1050' - 5000' Set and Cement 13-3/8" Casing	Some leakage Possible H2S Anhydrite Salt Sections	17-1/2" PDC 9-5/8" x 8" MM 9 jnt - 8" DC 21 jnt - 5" HWDP 5" DP to surface	9.8 - 10.2 ppg Brine Water/ Mud	5000' 13-3/8" 68# HCL80 BTC Centralizers - bottom jnt, every 3rd jnt in open hole and 2 jnt inside the surface casing	Mudlogger on site by 1200'	13.2 ppg lead/ 14.8 tail 3200 sx Class C 4hr TT 10% Excess 1000 psi CSD after 10 hrs Circ. to Surface	
Top Salt - 1150' Base of Silicates - Castile - Base Salt - 4745' ECP DV Tool - 4980' Intermediate Depth - 5000'		<b>INTERMEDIATE 2 CSG</b> Drill 8100' of 12-1/4" Hole 5000' -13100' Set 9-5/8" Intermediate Casing and Cement in 3 Stages	Hard Drilling thru Brushy Canyon Some leakage to complete loss Water flows Some Anhydrite H2S possible Production in the Bone Spring and Wolfcamp Ballooning is possible in Cherry Canyon and Brushy if broken down	12-1/4" PDC 8" MM 9 jnt - 8" DC 8" Drilling Jars 21 jnt - 5" HWDP 5" DP to Surface	8.5-10.5 ppg Oil Based Mud High Vis Sweeps UBD/MPD	10M Section 13100' of 9-5/8" 53.5# HCP110 BTC Special Drift to 8.535' Externally Coat 2820' Between DV Tools DV tool at at 7800' ECP DV Tool 15' Inside Previous Casing Centralizers - bottom jnt, 100' aside of DV tool, every 3rd joint in open hole and 5 within the surface casing	MWD GR + CBL on 13-3/8" Casing	<b>Stage 3</b> 11.9 ppg lead/ 15.6 tail Class C 5hrTT 1455 sx - 25% xs 1000 psi CSD after 10 hrs Circ. to Surface  <b>Stage 2</b> 11.9 ppg lead/ 15.6 tail Class H 5hrTT 700 sx - 10% XS 1000 psi CSD after 10 hrs Calc. to DV  <b>Stage 1</b> 11.9 ppg lead/ 15.6 tail Class H 6hrTT 1245 sx - 10% XS 1000 psi CSD after 10 hrs Calc. to DV	
Delaware Mtn Group - 4950' Lamar LS - 4950' Bell Canyon - 4978' Cherry Canyon - 6050' Brushy Canyon - DV Tool - 7800' Bone Spring - 8980' 3rd Bone Spring - 11750' Wolfcamp - 12310' Liner Top - 12,900' Intermeditate 2 Depth - 13,100'	<b>LINER</b> Drill 4450' of 8-1/2" Hole 13100' -17550' Set 7-5/8" Liner and Cement in Single Stage	High Pressure (up to 15 ppg) and wellbore instability anticipated in Atoka Production in the Wolfcamp Atoka and Morrow Hard Drilling in the Morrow Clastic	8-1/2" PDC 6-3/4" MM 21 jnt - 6" HWDP 5" DP to Surface	11-12.5 ppg Oil Based Mud UBD/MPD	4650' of 7-5/8" 39# P110 FJ (Gas Seal) VersaFlex Packer Hanger Centralizers on and 1 jnt above shoe jnt and then every 2nd jnt.	MWD GR Triple combo + CBL on 9-5/8" Casing	15.6 ppg 350 sx - Class H 8hrTT 10% Excess 1000 psi CSD after 10 hrs	4610' of 5-1/2" HCP110 17# TCPC Duoline Internally Coated Injection Tubing	
Penn - Strawn - 14342' Atoka - 14553' Morrow - 14855' Miss LS - 16980' Woodford Sh - 17120' Packer - 17,450' Liner Bottom Depth - 17,550'	<b>Injection Interval</b> Drill 1250' of 6-1/2" hole 17,550 to 18,800'	Chert is possible Loss of Circulation Anticipated H2S possible  BHP estimated 8000 psi BHT estimated 260 F	6-1/2" PDC 4-3/4"MM 9 jnt - 4-3/4" DC 4-3/4" Drilling Jars 18 jts: 4" FH HWDP 4" FH DP to Surface	Fresh Water Mud 8.4- 8.6 ppg (possible flows)	Openhole Completion Interval	MWD GR Triple Combo with FML, CBL on 7-5/8"	Displace with 3% KCl (or heavier brine if necessary)	7-5/8" xT-17T TCPC Permanent Packer with High Temp Elastomer and full Inconel 925 trim	
Devonian - 17550' Silurian - Fusselman - 18700' Driller's Total Depth - 18,800'									