



Safety & Environmental Solutions

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Memorandum

Date: June 18, 2015

To: Permit Section, NM Office of the State Engineer

From: David G. Boyer, P.G. 

RE: Proposed Procedures for Monitor Well Installation, Artesia, New Mexico

The following are the procedures proposed to be used in drilling, installation and developing three monitor wells to be installed at a Yates Petroleum Corporation location (Compromise SWD #1) southeast of Artesia, New Mexico. Prior to drilling approved State Engineer permits will have been obtained.

1. Three 2-inch ID diameter PVC wells will be drilled with a hollow-stem auger at the approved locations approximately 9 miles south of Artesia and south of the east end of Dayton Road. Depth to water is approximated across the site at from 10 to 25 feet. The lithology at the location is fine grained sand, silt and clay with sand lenses containing aquifer water. Very little hard drilling is expected though some limestone river gravels may be present.
2. Wells are to be constructed with 15 feet of slotted flush joint new screen with slot size of 0.010 inches. The sand pack should be 10/20 silica sand or finer.
3. Sand is to be placed opposite the screen to a distance of 2-feet above the top of the screen. A 2-foot bentonite seal will be placed above the sand and hydrated. A bentonite-cement grout will be placed above the bentonite chips to the surface.
4. Surface completion will consist of a steel riser with a hinged locking cap cemented into the annular space. A 4x4 ft. cement pad will complete the installation. The location is not in an area subject to traffic so no protector posts are necessary.
5. Well development will be with a surge block and capture of fines with a bailer. This work will be performed by the driller.
6. Drill cuttings and development water will be contained on site in drums.

A diagram of showing proposed completion information is attached. Lithology shown on the diagram is for illustrative purposes only; it is from a previously installed monitor well for another client at a location in the area and may not be representative of conditions at this site.

If you have any questions, please feel free to contact me at the email or phone number above or by cell phone at (575) 390-7067.

DGB/DGB



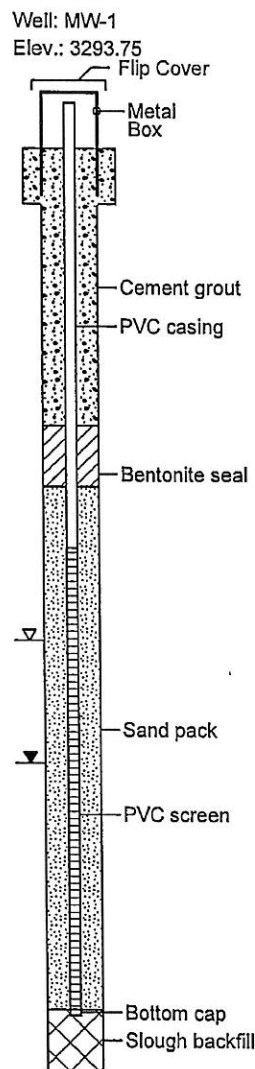
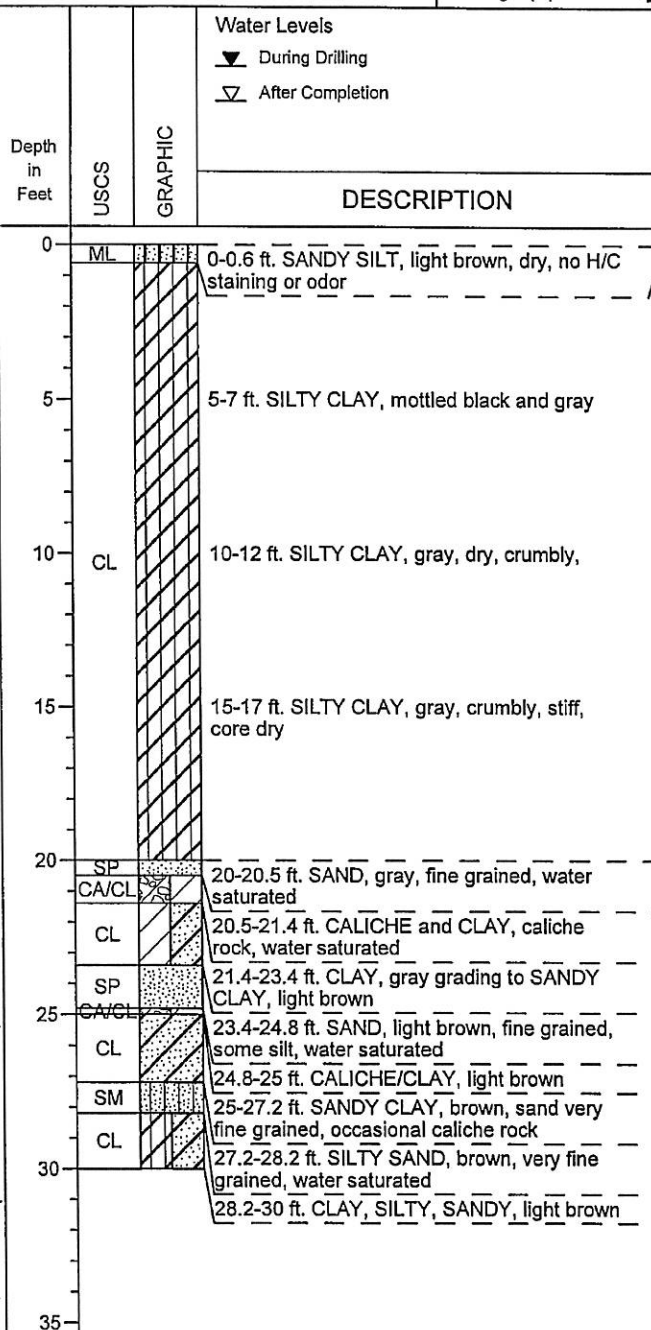
SAMPLE WELL COMPLETION LOG MW-1

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Monitor Well #1
Yates Petroleum Corp., Compromise SWD #1
SE/4 NE/4 Section 30, T18S, R27E
Eddy County, New Mexico
N32.721179°, W104.313273°

Date/Time Started : 07/06/15, ____
Date/Time Completed : 07/07/15, ____
Hole Diameter : 8 1/4 in.
Drilling Method : Hollow Stem Auger
Drilling Equipment : ____

Drilled By : Enviro-Drill, Inc.
Sampling Method : 2 ft. split-spoon
Logged By : David Boyer, PG
Client Representative : Amber Cannon
Survey By : Harcrow Surveying



COMPLETION DATA

Hole Depth : 30 ft. Below LS
TD Inside casing : 31.16 Below TOC
Top casing : ~ 3 ft. above ground

CASING, SCREEN & CAP

Material, joints : PVC, threaded
Diameter : 2 in. ID
Manufacturer :
Screen type : Slotted
Screen length : 15 ft.
Screen opening : 0.010 slot
Scrn. placement : 13-28 ft. BLS
Bottom Cap : 0.2 ft PVC
Protector Casing : Above-ground steel
Lock Key # : None

SEALS & SAND PACK

Cement seal type : Cement grout
Cem't placement : 0 - 9 ft. BLS
Annular seal type : Bentonite 3/8" chips
Seal placement : 9-11 ft. BLS
Sand pack type : 10/20 Carmeuse silica
Sand placement : 11-28 ft. BLS
Bottom hole backfill : 28-30 ft. Native fill

ELEVATIONS.

Ground elevation : 3293.75
Top of concrete pad : 3294.75
Top of PVC casing : 3296.55

WELL INSTALLATION:

7/06/15: Drilled to 30 feet. Saturated about 20 ft. Slough backfill to 28 ft. Placed sand (10 bags) to 11 ft. Set pipe/screen to 28 ft. Bentonite (2 bags) to 9 ft. Cement grout to surface and cement above-ground steel protection box with concrete pad.

WELL DEVELOPMENT:

7/07/15 Well developed with surge block and bailing, purged 15 gallons water and sand

Water Level Measurements:

07/06/15 - 19.43 ft. BTOC
07/07/15 - 19.01 ft. BTOC

Notes:

This is a SAMPLE log with lithologic and completion information taken from a previously completed monitor well in the vicinity.