Merhar, Richard L.

From: Merhar, Richard L.
Sent: Tuesday, May 27, 2014 3:52 PM
To: Wade, Colin (cowade@pa.gov); Staron, Richard (rstaron@pa.gov)
Cc: Machusick, Matthew D.
Subject: GTAC Hoff VC Nested Well Screen Recommendation-MW-9D
Attachments: MW-9D.pdf; MW-9 Full Composite Draft.pdf

Colin and Rich, from review of the drilling and geophysics data for this well, we recommend the following straddle packer intervals at MW-9D. The draft well log and borehole geophysics logs are attached.

Well: MW-9
Depth to Water: ~16 ft on 5/19/14
Completion: Stick up, approximately 2.5 ft.
Casing Depth: 37.5 ft
Proposed Sampling Zones:

1. **75-95 ft** (Sample above packers)
    a. Top of Upper Packer: 75 ft
    b. Top of Lower Packer: 75 ft + 20 + length of upper packer (~3ft) = ~98 ft
    c. Pump placed outside packer assembly at ~70 ft.
    d. ***Both packers inflated***
    e. *Alternatively this zone could be done with bottom of top packer at 62 ft and top of bottom packer at 82 ft. Top packer would be open and bottom packer would be inflated.*
2. **85 to 105 ft**
    a. Bottom of Upper Packer at 85 ft
    b. Top of Lower Packer at 105 ft
    c. Pump placed in packer assembly at ~80 ft
3. **135 to 155 ft**
    a. Bottom of Upper Packer placed at 135 ft
    b. Top of Lower Packer at 155 ft
    c. Pump placed in packer assembly at ~130 ft
4. **155 to 175 ft**
    a. Bottom of Upper Packer placed at 155 ft
    b. Top of Lower Packer at 175 ft
    c. Pump placed in packer assembly at ~150 ft
5. **194 to 214 ft**
    a. Bottom of Upper Packer placed at 194 ft
    b. Top of Lower Packer at 214 ft
    c. Pump placed in packer assembly at ~190 ft
    d. ***Both packers inflated***
    e. Borehole TD is 220, so care must be taken to ensure bottom of packer assembly is not damaged.

The 5 zones were chosen based on the following:

1. **75 to 95 ft**
    a. Conductivity and temperature indicate a change in water quality immediately below this interval.
    b. Depth to water is approximately 16 ft (at time of geophysics)
    c. Caliper, ATV and OTV indicate multiple fractures throughout interval
    d. Interval is meant to target the uppermost water bearing zone below the casing
2. **85 to 105 ft**

a. Drilling logs indicate minor water bearing zone between 90-100 ft.
b. Conductivity log suggests this may be a distinct water regime compared to the zones above/below this interval
c. Interval is meant to target the first water bearing zone noted during drilling and to determine whether the water quality differs from the uppermost water bearing zone.

3. **135 to 155 ft**
    a. Drilling notes water bearing zone around 145ft yields 10 gpm
    b. Caliper, OTV, and ATV indicate several bedding partings and/or fractures that are likely to contribute flow to the borehole.
    c. Conductivity shows strong change
    d. Interval is meant to determine whether the water quality differs from the upper and lower water bearing zones.
4. **155 to 175 ft**
    a. Drilling notes water bearing zone around 155ft yields about 20 gpm
    b. Caliper, OTV, and ATV indicate several bedding partings and/or fractures that are likely to contribute flow to the borehole.
    c. Interval is meant to determine whether the water quality differs from other water bearing zones.
5. **194 to 214 ft** (inflate both packers)
    a. Drilling notes water bearing zone around 208 ft yields about 30 gpm
    b. Caliper, OTV, and ATV indicate several bedding partings and/or fractures that are likely to contribute flow to the borehole.
    c. Conductivity increases sharply in this zone.
    d. Interval is meant to determine whether the lower portion of the borehole is a distinct flow regime with different.

Please review within the next day or so if you can and let me know if you have any questions, suggestions, or preferred modifications.
Thanks, Rich

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