

The Success of Drilling a Well can be Measure Several Ways.

1) Most important is that you hit water.....!

2) Quality of Water

a) Safe to Drink

b) Aesthetics –

1) Minerals

2) Pleasing Odor

3) Clarity

4) Effervescence

c) Lab Test should be available in about 3 weeks

3) Quantity

a) Step Test

250 -500-750-890 (max of the pump)

b) 24 Hours a day for 7 Days

850 gallons per day = total of 8.6 million gallons

Draw down;

Maximum = 15.4 (10%)

Feet and Average = >14 feet

c) Post pumping Recovery Time

92% recover in first minute

Atmospheric Inaccuracies

4) Ultimate Capacity

a) available water – more than adequate

b) well size – not an inhibitor

c) system's maximum acceptability of volume and pressure

d) availability and quality of available power

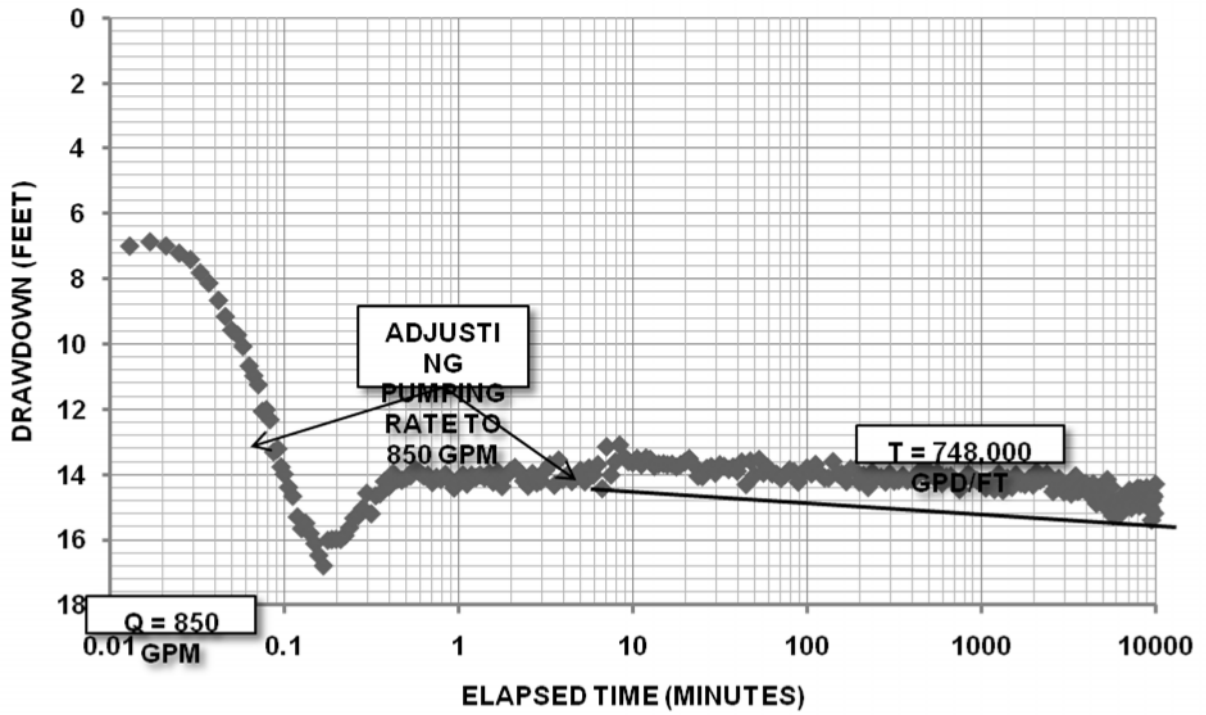
Well #3 Profile



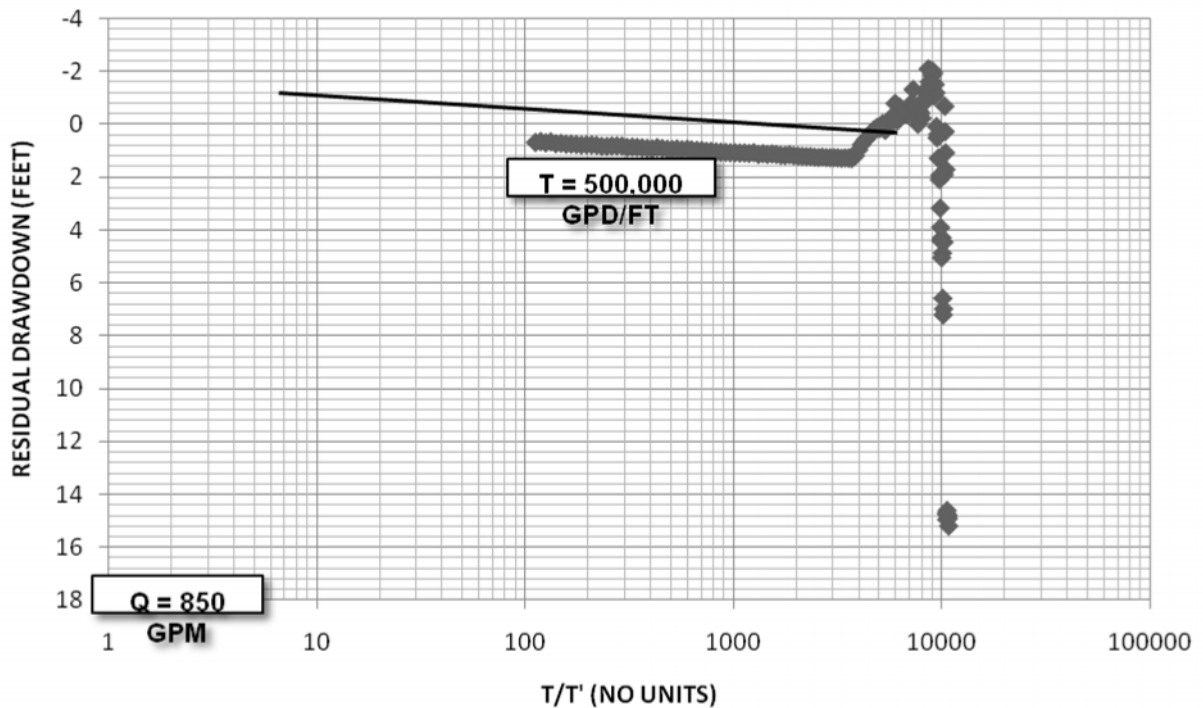
Summary of Test Pumping Results

- Well was drilled to a depth of 521 feet
- 100 horsepower pump was set to a depth of 353 feet.
- The pre-pumping water level in the well was 198.8 feet.
- Water levels in the well were measured by a TROLL pressure/temperature transducer with an airline as a backup measuring device.
- Step-rate test pumping was conducted at rates of 250, 500, 750, and 890 gallons per minute (gpm).
- 890 gpm was the maximum output of the pump.
- 74,100 gallons of water were pumped during the step-rate test.
- After the well recovered to 98% of the pre-pumping water level (2.5 hours after the step-rate test), the 7-day constant-rate test started at a target rate of 850 gpm
- The maximum drawdown during the constant-rate test was 15.4 feet, which occurred near the end of the test.
- The maximum drawdown observed at the Airstrip Well during pump testing was 3.5 feet. This drawdown may be amplified due to a low atmospheric pressure system passing through the region during testing.
- The average pumping rate for the 7-day test was 848.2 gpm with a total of 8.6 million gallons produced.
- One minute after shutting down the pump after 7 days of continuous pumping, the well was 92% recovered.
- Based on recovery data collected by the pressure transducer, the transmissivity of the well is 500,000 gallons per day per foot.
- Throughout pump testing, field measurements indicated that the produced water was high quality drinking water.
- Two sets of water quality samples were collected during the constant-rate test, a midpoint set and a final set. These samples were sent to Energy Labs, Casper, Wyoming for analyses. Results are generally available approximately three weeks after the samples are received by the laboratory.

**TSVR WELL NO. 3
CONSTANT-RATE PUMP TEST
FEBRUARY 28 - MARCH 7, 2011**



**TSVR WELL NO. 3
CONSTANT-RATE PUMP TEST RECOVERY DATA
MARCH 7 - 8, 2011**



Field Measurements of Water Quality from TSVR Well No. 3

The water produced from TSVR Well No. 3 was routinely measured for conductivity (the ability of water to conduct electricity), pH, temperature, and turbidity (the degree of cloudiness of the water). The temperature of the water during the pump test was 44.5°F, and the pH was 7.9 to 8.0.

The results of conductivity measurements indicate that the concentration of dissolved minerals is low in this well water. Total Dissolved Solids (TDS) is a general indication of water quality and is calculated from conductivity as measured in the field. Field measurements of TDS of water from TSVR Well No. 3 results in measurements of approximately 198 milligrams per liter (mg/L) or parts per million. Since the aquifer is comprised of limestone, the primary dissolved constituents in this water are calcium and bicarbonate (limestone consists of calcium carbonate). Laboratory results from samples collected during pump testing will provide a detailed list of dissolved constituents of water produced from this well.

Turbidity expressed in nephelometric turbidity units (NTU) measured during pump testing is very low at 0.30 to 0.50 NTU. This is well below the EPA standard of maximum turbidity of 5 NTU for surface water. Turbidity is not regulated for groundwater; however, low turbidity is desirable for aesthetics and for minimizing deposition of solids in the water system. The low turbidity values from TSVR Well No. 3 demonstrate that the well was properly constructed and properly developed. In comparison, the turbidity measured from the tap in Bob Starkey's motel room was 1.34 NTU.

The high quality of water produced from this well is very similar to the quality of water produced from TSVR Well Nos. 1 and 2.