IN REPLY REFER TO:

# United States Department of the Interior

U. S. GEOLOGICAL SURVEY
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April 17, 2012

Mr. Wayne Praskins
U.S. Environmental Protection Agency, Superfund Program
75 Hawthorne Street
San Francisco, CA 94105

Dear Mr. Praskins:

The purpose of this letter is to provide well-bore flow and depth-dependent water-quality data from well 1N/5W-34B1 (Rialto-2) near Rialto, CA. The data were collected February 22-26, 2012 under unpumped and pumped conditions according to procedures outlined in California Water Science Center "Standard operating procedures: down-hole geophysical tools. Revised January 17, 2012". A summary of the geophysical logs collected is provided in Table 1. These logs were provided by email on April 17, 2012. Water samples from selected depths within the well were collected under unpumped and pumped conditions using a wire-line bailer. Samples also were collected from the surface discharge of the pump. Water samples were analyzed by the U.S. Environmental Protection Agency (U.S. EPA), Region 9 Laboratory, in Richmond, CA. Analytical results were provided by U.S. EPA to the U.S. Geological Survey.

***Unpumped conditions*—**The unpumped water level on February 22 was 472.74 feet (ft) below land surface datum (blsd). The unpumped logs (fig. 1) show generally downward flow through the well screen from 588 to 800 and from 876 to 960 ft blsd at rates of about 15 and 6 gallons per minute (gpm), respectively. Fluid resistivity and fluid temperature logs collected at that time were consistent with well-bore flow data. Unpumped water-quality samples were collected within the well at depths of 600, 700, 780, 860, and 980 ft blsd. Perchlorate concentrations at sample depths within the well ranged from 39 to 50 micrograms per liter (µg/L). With the exception of the shallowest sample at 600 ft blsd, perchlorate concentrations ranged from 50 to 53 µg/L. Trichloroethene concentrations at sample depths within the well ranged from 2.8 to 4.6 µg/L. Perchlorate, trichloroethene or other compounds were not detected in the equipment blank from the wire-line bailer.

***Pumped conditions*—**The pump intake was set at a depth of 531 ft blsd and the well was pumped at a rate of about 260 gpm during sample collection. Although pumped flow logs collected on February 24$^{th}$ were used to guide collection of water-quality data on February 25$^{th}$, flow data from these logs were considered to be of poor-quality, and

additional flow logs were collected on February 26th. On February 26, the unpumped water level was 472.97 ft blsd and the pumped water level was 475.65 ft blsd. Flow from the aquifer into the well during pumping was relatively uniform from the top of the well screen at 588 ft blds to a depth of about 750 ft. Smaller amounts of flow entered the well below 750 ft (fig. 2). Water-quality samples were collected from the surface discharge of the pump, and from within the well during pumping at depths of 700, 800, 860, and 980 ft blsd. Perchlorate concentrations from selected depths within the well ranged from 43 to 65 μg/L. The highest concentration was from the surface discharge of the well. The calculated perchlorate concentration in water entering the well between the top of the well screen and the sample depth at 700 ft was 85 μg/L (fig. 3). Trichloroethelene concentrations from selected depths within the well ranged from 4.2 to 5.9 μg/L. The highest concentration was from the surface discharge of the well. The calculated trichloroethelene concentration in water entering the well between the top of the well screen and the sample depth at 700 ft was 7.6 μg/L (fig. 3). Perchlorate, trichloroethene, or other compounds were not detected in the equipment blank from the wire-line bailer. Perchlorate and trichloroethene analysis of replicate samples collected from a depth of 700 ft agreed within 2 and 7 percent, respectively.

If you have any questions please call at (619) 225-6131.

Sincerely

John Izbicki
Research Hydrologist

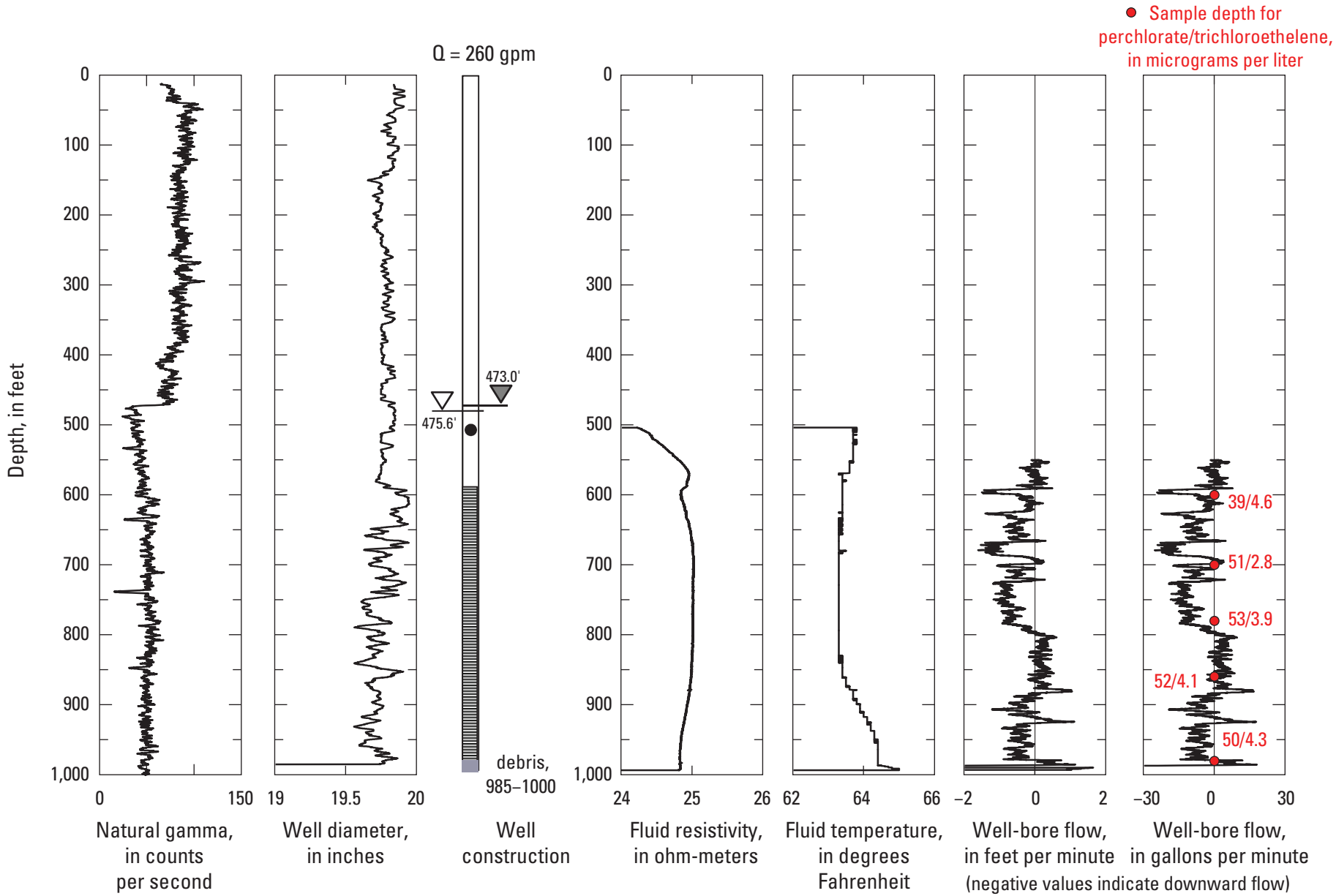


**Figure 1.** Unpumped logs and depth-dependent water-chemistry data from well 1N/5W-34B1(Rialto-2), Rialto, CA, February 22–23, 2012.

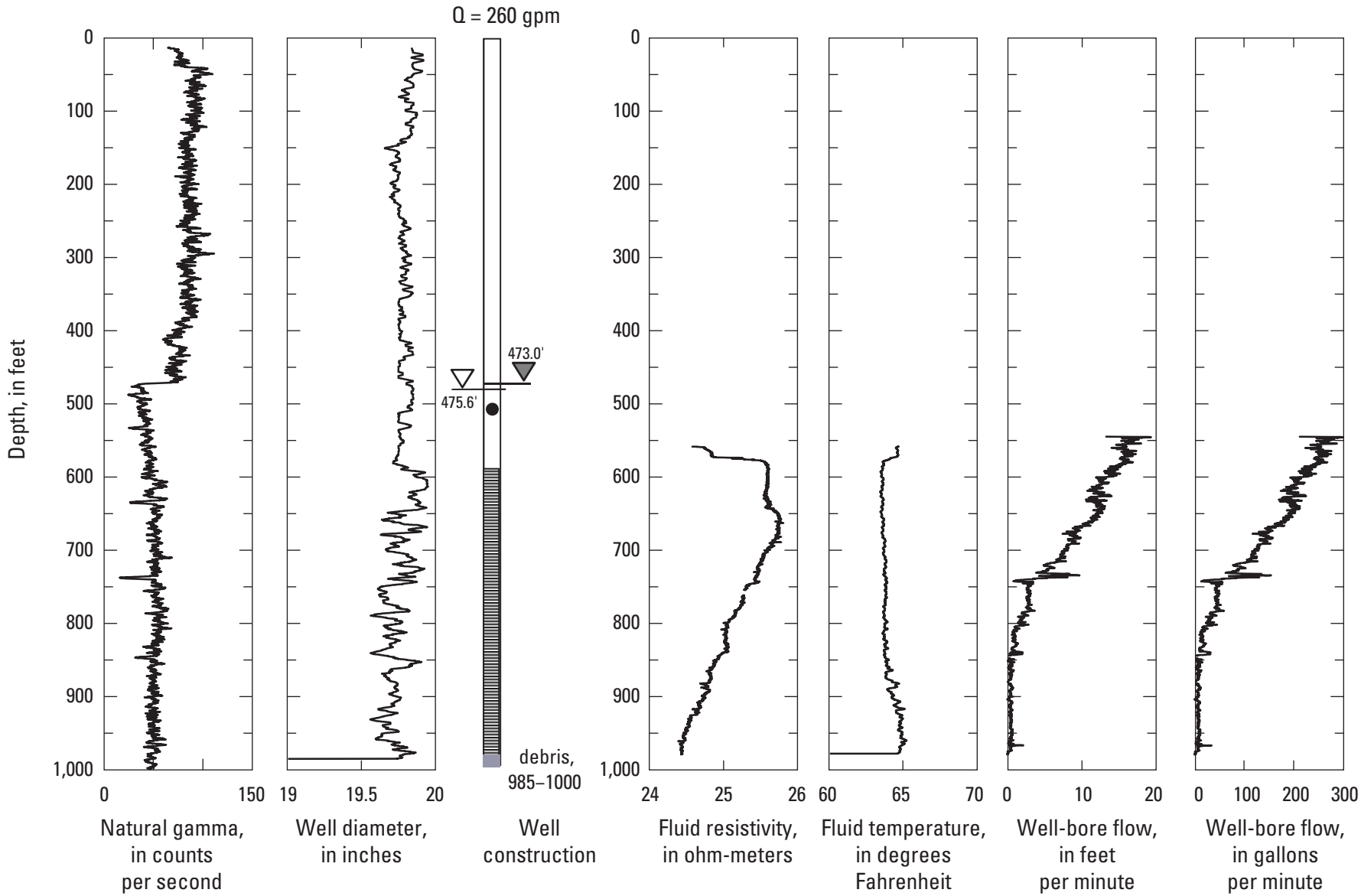


**Figure 2.** Pumped logs from well 1N/5W-34B1 (Rialto-2), Rialto, CA, February 26, 2012.

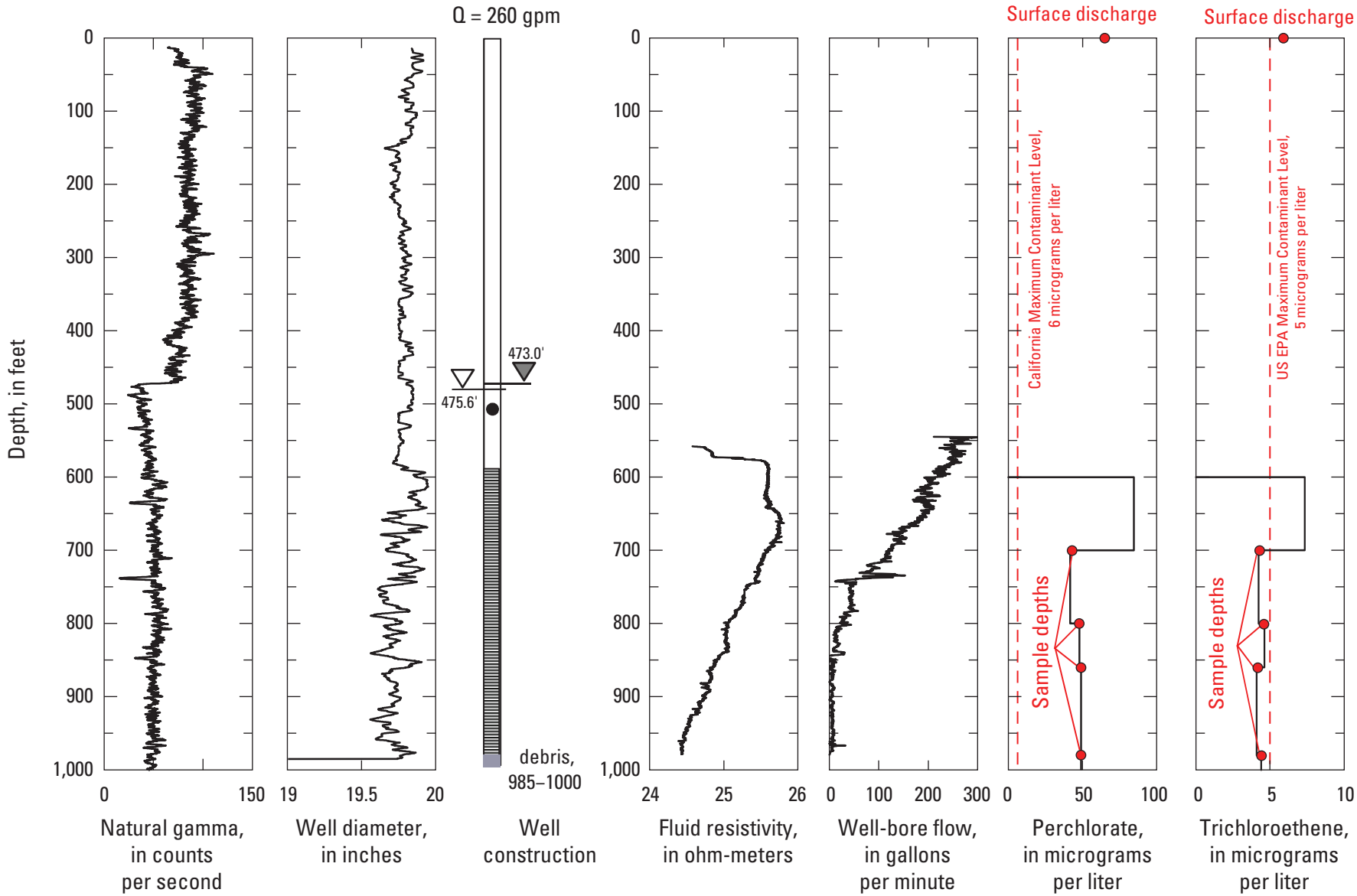


**Figure 3.** Pumped logs and depth-dependent water-chemistry data from well 1N/5W-34B1 (Rialto-2), Rialto, CA, February 25–26, 2012.

Table 1.--Borehole geophysical logs collected from well 1N/5W-34B1 (Rialto-2), Rialto, CA, February 22-26, 2012.
[Well logs provided electronically to U.S. Environmental Protection Agency]

| | |
|---|---|
| Logs collected under unpumped conditions, February 22-23, 2012 | |
| Natural gamma | The gamma sensor is embedded with the fluid resistivity tool |
| Caliper | RIALTO-2_02-23-12_08-27_9065A_. |
| Fluid resistivity | RIALTO-2_02-22-12_06-55_9042C_. |
| Fluid temperature | The fluid temperature sensor is embedded with the fluid resistivity tool |
| Electromagnetic (EM) flow logs and downward trolling speed | |
| 5 foot per minute | RIALTO-2_02-22-12_11-06_9721NH_ |
| 10 feet per minute | RIALTO-2_02-22-12_10-00_9721NH_ |
| 15 feet per minute | RIALTO-2_02-22-12_13-00_9721NH_ |
| Logs collected under pumped conditions, 260 gallons per minute, February 24 and 26, 2012 | |
| Naural gamma | Does not change as a result of pumping: used data from unpumped log |
| Caliper | Does not change as a result of pumping: used data from unpumped log |
| Fluid resistivity | RIALTO-2_5FPM_PUMP_02-24-12_15-18_9721NL_.10_553.90_979.20_PROC |
| Fluid temperature | The fluid temperature sensor is embedded with the electromagnetic flow tool |
| Electromagnetic (EM) flow logs and downward trolling speed | |
| 5 foot per minute | RIALTO-2_5FPM_PUMP_02-26-12_16-04_9721NL_.10_540.70_979.10_PROC |
| 10 feet per minute | RIALTO-2_10FPM_PUMP_02-26-12_14-55_9721NL_.10_540.70_979.20_PROC |
| 15 feet per minute | RIALTO-2_15FPM_PUMP_02-26-12_14-09_9721NL_.10_544.00_979.20_PROC |

Flow logs collected under pumped conditions, February 24, 2012 were determined to be of poor quality. The logs were used to selected sample depths but were not used in the final interpretation. The fluid resistivity and fluid temperature data collected using the electromagnetic (EM) flow tool during pumping conditions on February 24 were used in the data analysis.