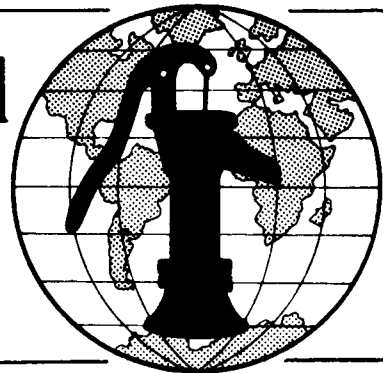


Water for the World



Maintaining Well Logs Technical Note No. RWS. 2.C.6

A well log is a complete record of drilling a well. Maintaining a drilling log is important to record the basic data from a well for future reference and to aid in the designing of new wells. Maintaining a log involves recording information on the physical characteristics of the well, the soil formations encountered during construction, and the yield of the well.

This technical note describes how to maintain a well log. Read the entire technical note before recording information in the log.

Useful Definitions

AQUIFER - A water-saturated geologic zone that will yield water to springs and wells.

DRAWDOWN - The distance between the water table and the water level in a well during continued pumping.

SPECIFIC CAPACITY - The yield of a well divided by the drawdown.

STATIC LEVEL - Measured distance to the water level in a well before pumping.

WATER TABLE - The top, or upper limit, of an aquifer.

YIELD - The volume of water that can be pumped during a specific period of time.

A well log can be kept on a blank sheet of paper or on a form like the sample shown in Table 1. The following numbered steps correspond to the numbered items in Table 1.

(1) Indicate the location of the well. For example, "southeast corner of Hernandez lot." Draw a location map on the back of the log showing the distances from the well to privies, dwellings, property lines, and other permanent reference markers such as large trees rocks or outcrops. Refer to the location maps shown in the technical notes on construction of wells. If you can use the map provided by the project designer, you need not draw a new one.

(2) Record the owner of the well. For example, "Raoul Hernandez." If it is a community well or if there is more than one owner, write this information on the line after 'owner's name.'

(3) Record the driller's name or the name of the construction foreman or the name of the company that drilled the well. For example, "Yusuf al-Nahis, construction foreman."

(4) Record the date that construction of the well began. For example, "17 June 82."

(5) Record the date that construction was completed, including the installation of the casing and well screen or intake section. For example, "24 June 82."

(6) Record the number of workers that were needed to construct the well. For example, "4."

(7) Indicate whether the well is a hand dug, driven, jetted, bored, or cable tool well. For example, "bored well."

(8) Record the diameter of the well. For example, "100mm."

(9) Record the depth of the well. For example, "27m."

(10) Record the types of soil encountered as the well was dug, the depths at which the soil types were encountered, and the thickness of each soil layer. For example, "topsoil/0-0.5m/0.5m; unconsolidated-small rocks/0.5-12.5m/12.0m; clay/12.5-13.0m/0.5m; coarse gravel/13.0-15.0m/2.0m." If this is a test well, or if you anticipate designing and constructing a number of new wells, it may be useful to collect samples of each type of soil and place them in labeled containers for future reference.

(11) Record the aquifer formation. For example, "coarse sand."

(12) Record the depth to the water table, the top of the aquifer. For example, "15m."

(13) Record the distance that the well was sunk below the water table. For example, "12m."

(14) Record the type of material used for casing. For example, "plastic pipe; sections 2.0m long, 100mm diameter."

(15) Record the type of well screen or intake section. For example, "plastic pipe with slots."

(16) Record the type of pump or water-lifting device. For example, "deep well force pump."

(17) Record the static level of the water in the well. For example, "15.75m." This measurement is made from a fixed reference point, and it is

the first step in testing the yield of the well. See "Testing the Yield of Wells," RWS.2.C.7.

(18) Record the data obtained from testing the well yield. Generally, tests are made for yield, drawdown, and specific capacity. These tests are done at one-third, two-thirds, and full capacity of the pump. For example, "one-third capacity: yield = 60 liters/min., drawdown = 2.50m, specific capacity = 24.0 liters/min./m; two-thirds capacity: yield = 120 liters/min., drawdown = 5.50m, specific capacity = 21.8 liters/min./m; full capacity: yield = 180 liters/min., drawdown = 8.75m, specific capacity = 20.6 liters/min./m."

(19) Record the time it takes for the water level to rise completely to the static level after testing the pump at full capacity. For example, "14 hours."

(20) Note and record the quality of the water after the tests; that is, whether it is clear, cloudy, or turbid, heavily clouded with sediment. For example, "clear."

(21) Was the well disinfected? Answer "yes" or "no".

(22) If the well was disinfected, record the type of chlorine compound used. For example, "chlorine bleach with 5 percent available chlorine."

(23) Record the amount of chlorine compound used. For example, "0.2 liters."

When the well log has been completed, file it in a safe place for future reference.

Table 1. Sample Well Log

- (1) Location of well (draw map): southeast corner of Hernandez lot
 (2) Owner's name: Raoul Hernandez
 (3) Driller's name: Yusuf al-Nahis, construction foreman
 (4) Date drilling started: 17 June 82
 (5) Date completed: 24 June 82
 (6) Number of workers: 4
 (7) Type of well: bored well (8) Diameter: 100mm (9) Depth: 27m

Soil formation encountered	Depth encountered	Thickness
a. topsoil	0-0.5m	0.5m
b. unconsolidated-small rocks	0.5-12.5m	12.0m
c. clay	12.5-13.0m	0.5m
d. coarse gravel	13.0-15.0m	2.0m
e.		

(If more space needed, use back of page.)

- (11) Aquifer formation: coarse sand
 (12) Depth to water table: 15m (13) Depth of well below water table: 12m
 (14) Casing material: plastic pipe; sections 2.0m long, 100mm diam.
 (15) Type of screen or intake: plastic pipe with slots
 (16) Type of water-lifting device: deep well force pump
 (17) Static level (water level before pumping measured for reference point):
15.75m

	One-third pump capacity	Two-thirds capacity	Full capacity
Yield	60 liters/min.	120 liters/min.	180 liters/min.
Drawdown	2.50 m	5.50 m	8.75m
Specific capacity	24.0 liters/min./m	21.8 liters/min./m	20.6 liters/min./m

- (19) Time to fully recover to static level: 14 hours
 (20) Water quality after tests: clear
 (21) Was well disinfected? yes
 (22) If yes, chlorine compound: chlorine bleach (5% available chlorine)
 (23) Amount of compound: 0.2 liters