

DRAWDOWNS MADE SIMPLE SECOND ADDITION

As I'm sitting here writing this article I'm looking out side and it's been rainy and drizzling for the last couple of weeks. Not more than three weeks ago we received the biggest snowfall of the season at least for us here in eastern Nebraska. It's hard to believe that summer is almost upon us again and I'm sure things will be heating up soon. This means your customers will again be using more water to water their lawns, gardens and the like, which means your wells will be working harder and pumping more water. Hopefully Mother Nature will cooperate a little more this year with some timely and plentiful rains. I'm sure a lot of you sat in on Jack Daniel's presentation at the Columbus conference, according to his sources it doesn't sound like the drought is giving up any time soon. He seems concerned about water well levels and that water operators are keeping a close eye on them. After visiting with several operators and some of the state field representatives I think it's time for a review on performing and recording water levels in your wells.

Chapter 22 operation and maintenance of a community and non-community public water system is most likely the most important chapter for water operators. It deals with the daily operations of your water system. In this chapter you can find the regulations on recording your water well levels. This portion of the regulations reads as follows. "Measure and record static water levels and pumping water levels, and calculate available drawdown in each active well at a frequency of no less than once every three months from October 1 through April 30 of each year, and at a frequency of no less than once per month from May 1 through September 30 of each year. Static and pumping levels must be expressed as the distance in feet from the measuring point at the upper terminus of the well to the water level in the well. Available drawdown must be expressed as the distance in feet between the static water level and the top of the well screen or pump intake whichever is located nearer to the static water level."

There are a couple of different methods to take well water level readings. One way is to drop a well sounder down the casing vent. A well sounder transmits an audible sound, or illuminates a light, or both, when the end of the cable touches the water. The cable is marked to indicate depth. Before using a sounder always be sure to properly disinfect the cable. To record static water level, simply drop the sounder down the well when the

well is not running, when the cable reaches the water, record the depth. This reading will be your static water level. To record the pumping water level do the same thing only let the well run for several minutes first. To establish an accurate pumping water level try to let the well run the same number of minutes each time, this reading will be the pumping water level.

There are some problems you may want to consider before using a well sounder. On some types of line shaft turbine wells it is impossible to get a sounder down the casing vent. If you have a submersible well with a pitless adapter you will have to remove the sanitary cap every time to check the water levels. Any time you remove the casing vent to insert the sounder, or break the sanitary seal on a submersible well, you are running the risk of contaminating the well with bacteria.

The other method to measure the water levels in your well is by the use of an airline. There are a few things you have to know before you can use this method.

#1) You will need to know the length of the airline. If you don't know the length of the airline, call your well driller they should be able to tell you. Once the airline length has been determined, write it on the face of the drawdown gauge for future reference.

#2) You will need a working drawdown gauge. I would recommend that you get a gauge that is marked with feet of water and psi. Ignore the psi reading, unless you want to convert psi into feet of water every time you check the water levels in your wells.

#3) You will need a way to pressurize the airline. You can use an air bubble, or a bicycle tire pump works just as well.

To determine the static water level, after pressurizing the airline watch where the needle on the gauge stops. Write down this reading. Subtract this number from the airline length; the answer is your static water level.

Example, the airline length in my well is 100 feet. After pressurizing the drawdown gauge it reads 40 feet. $100 \text{ feet} - 40 \text{ feet} = 60 \text{ feet}$. The static water level in my well is 60 feet.

To determine pumping water level, follow the same steps only turn the well on and let it run for several minutes first.

Example, my well has been running for 10 minutes. After pressurizing the drawdown gauge my reading is 30 feet. $100 \text{ feet} - 30 \text{ feet} = 70 \text{ feet}$. My pumping water level is 70 feet. The drawdown in this particular well is 10 feet.

According to the regulations you will also have to calculate and record the available drawdown. To determine this you need to know the height of the pump setting and the distance to the top of screen whichever is

nearest the surface. Your well logs, or well registration should have this information for you.

Example, according to my well logs the top of the screen in my well is 110 feet. 110 feet minus static level of 60 feet equals 50 feet of available drawdown.

You will be required to record this information at least monthly during the summer months and at least quarterly during the fall, winter and spring. Remember when your state field representative comes out for your sanitary survey they will be looking at these records.

I hope this review helps. If you would like some help performing your drawdown calculations please give us a call. We would be happy to come out and run through the procedure and get you started with a record keeping system.