

Date: 2019-10-02

To: LLPOA Board

From: Alfredo Czerwinski, MD

Subjects: 1. Water quantity
2. Water quality

Last month, there was some discussion about monitoring the water depth and water quality in Las Lomas wells. This may be the first report in a series.

Some homes in Las Lomas have rainwater collection, some have wells, and it is possible that some have both. Those of us with wells are dependent upon our aquifers, and those aquifers face a risk of depletion from drawdowns by Electro-Purification and Needmore, as well as a potential risk of contamination from the Kinder Morgan pipeline.

1. Water quantity

It is important to understand that an aquifer is a horizontal layer of rock through which water can easily move. Aquifers must be both permeable and porous and include various rock types as sandstone, conglomerate, fractured limestone and unconsolidated sand and gravel. The rubble zones between volcanic flows are generally both porous and permeable and make excellent aquifers.

An aquifer is *not* a flowing underground river. Ground water may flow through an aquifer at a rate of 50 feet per year or 50 inches per century, depending on the permeability. Furthermore, you may hear the term “aquitard” for a confining layer which is a relatively impermeable, and which may separate different aquifers. So perhaps it is best to think of an aquifer as an underground lake.

What this means is that one person might have a well drilled into the Edwards aquifer, while their neighbor has a well penetrating into the much deeper Middle Trinity aquifer. Changes in one aquifer would not necessarily appear in the other at the same time.

I have established a relationship with Mr. Justin Camp, a hydrogeologist technician at the Barton Springs Edwards Aquifer Conservation District (BSEACD), and I think that he will be a great resource going forward. Here is what I have learned from him so far.

- We have no need to purchase our own depth-measuring device. BSEACD will allow us to borrow their “e-line” device, which works by dropping a tape or cable down the well pipe and then beeps when it hits the top of the water. A different type of device uses sonar and is less accurate.
- I suggest that we designate two individuals (perhaps Lon & Alfredo) who could take responsibility to borrow the e-line from BSEACD once or twice yearly, for a day or two. We could notify LLPOA homeowners in advance, and allow them to request a depth measurement, which takes about 5 minutes per well.
- We should share the data with the homeowner, the POA, and BSEACD.

Hydrogeologists create models that use well data to understand overall changes in water levels. **We could be of great assistance to BSEACD if we share information about the wells in Las Lomas.**

Commonly, the well contractor provides some information to the homeowner when the well is drilled, such as depth of the hole, depth of the pump, and the water level.

- *As an example, I got a verbal report from Steve Swope that my well is 700 feet deep, with the pump about 400 feet down. My e-line measurement in May 2015 found water at 235 feet. If Steve remembers the name of the well contractor, I will try to get a copy of their record directly.*

I suggest that we survey our POA members to obtain similar information, and share the data with BSEACD to help improve their models.

Finally, Mr. Camp has agreed to provide regularly updated information about water levels in this area, since his models include regular update from wells that are near to Las Lomas. We can post links to those tables, and charts at our own POA website.

2. Water quality

One of our neighbors recently paid a commercial tester \$28 or so, and was completely satisfied with his verbal report that the water was “just fine.” They shared a copy of his report with me, and I see that he tested only for coliform bacteria. They did not test for pesticides, heavy metals, hardness, or other undesirable substances.

I spoke with the lab director at the non-profit Edwards Aquifer Research and Data Center (EARDC) in San Marcos, which is part of TSU. They analyze water from wells, springs, rivers, municipalities, and wastewater treatment facilities for a wide variety of chemical and biological constituents. They provide the bottles for water collection, and have a menu of tests. If we agreed upon a set of relevant tests and brought the samples all at once, they would offer a discount of 15-25% from their normal fee schedule.

Additional resources:

1. Justin Camp Hydrogeologist Technician jcamp@bseacd.org, 512-282-8441 x110
2. NGWA Groundwater Association <https://wellowner.org/basics/>
3. Texas Well Owners Guide to Water Supply
<https://www.agrilifebookstore.org/Well-Owner-s-Guide-to-Water-Supply-p/esc-029.htm>
4. EARDC <https://www.eardc.txstate.edu/lab-services/analytical.html>