

## **Water access at 7 Camino Perdido**

### *Background*

The half dozen or so properties on Camino Perdido were developed by Johnny Day in the nineties, and were split from a 50 acre parcel. When he developed the land he drilled a single communal well, to 960 feet and it was cased in PVC. Today, well drillers recommend that wells in this area are drilled to 1100 or 1200 feet. (See the hydrological survey we included of wells in the area by a geologist.)

At some point in the second half of 2003, the communal well went dry. It had silted up because of fairly heavy use we were told, and because it had PVC casing, it could not be redrilled any deeper. So, it was abandoned. Three houses at the far end of Camino Perdido drilled a shared well, amongst themselves. Two others drilled their own individual wells.

By the time all of this happened, the house at 7 Camino Perdido had been abandoned by its then owners, and went into foreclosure. So, by the time we purchased the house in April 2004, the communal well was dry, all of the other neighbors had come up with their own solutions, and this house had no access to any water.

### *Our choices*

We therefore had to decide what we should do. We could have drilled our own well, but we don't much like well water, as it tends to be quite hard, with a lot of dissolved minerals. In contrast, the other alternative was to use rainwater catchment. Rainwater harvesting is regarded favorably by the state of New Mexico. It has other advantages too. For example, with a large roof area – which this house has at roughly 4500SF – it's possible to easily capture thousands of gallons of water in a single storm. It's environmentally friendly too. Rainwater is intrinsically high quality soft water, and while it does have to be filtered, it is much, much nicer than local well water.

The primary calculation therefore is to ensure that there is sufficient water storage to cover the time between storms. This isn't difficult to calculate: you make an estimate of how much water you could possibly use in the household on a daily basis, and then multiply that by the maximum number of days that you think you might want to go between rainwater capture events. Please see the calculations from the design document for the house rainwater catchment system, which showed that 9,500 gallons of storage is appropriate. In fact, we installed ~12,000 gallons of storage tanks for the main house, to ensure that we had additional capacity.

Also, when we built the studio building in 2008, that building has over 1,000SF of roof capture capability. We also installed 3,400 gallons of storage in that building. So, in total we have about 15,000 gallons of water storage capacity on the property.

### *System reliability*

In twenty years of experience, we have only had two times when the systems didn't work.

In the first case, we made a modification to the main house system and an almost new float valve failed. The effect was that the pump dumped several thousand gallons of water onto the ground by the time we noticed the failure. We simply had the float valve replaced, and refilled the tank with hauled in water.

As mentioned, there is ready availability of hauled water. Eagle Water Services, based in Llano Quemado, will deliver water from the town of Taos, at a very reasonable cost, and with only a day or two of notice.

In the second case, we had a cracked underground pipe on the hydrant that's installed outside the studio. We were unaware of that, and left on vacation for a few weeks. We came back only to discover that the studio tanks were dry. Again, it was easy to fix: we turned off the shutoff valve to the hydrant, had a load of water delivered to refill the studio tanks, and the system was functional again. The pump didn't burn out, because we'd installed pump savers, which turn the pump off if it's overheating. We did eventually fix the pipe to the hydrant, but it's a good example that these systems are actually pretty resilient.

In contrast, more than one of our neighbors with wells have also had failures in those systems. Typically, it's the submerged pump – which is 1200' down – that fails. These are difficult and expensive to fix – the contractor has to bring in a specialized crane to lift the pump out, and then the replacement pump is not cheap. If the wire needs to be replaced, that's expensive too – 1200 feet of submersible grade cable, rated for well pump amperages, is not cheap either...

### *Water filtering*

As mentioned, water quality with rainwater catchment is intrinsically high. However, at the point of capture, it is possible for dust and things such as pine needles, etc. to get into the tanks. Rainwater catchment therefore requires filtration to remove these. The systems that are installed at 7 Camino Perdido have multiple separate water filters to remove solids, plus an ultraviolet filter to kill any bacteria that might be present. Additionally, there are reverse osmosis systems in all three bathrooms, and one in the kitchen. The water in the house is therefore completely drinkable.

These filters do need occasional replacement – on the order of once per year. However, they are easily accessible in the two pump houses, and it can either be done by the homeowner, or by any of the plumbing firms in town.

### *Other factors*

We discovered later that another advantage of having large water storage capacity on site is that insurers look favorably on this property, because in an emergency situation firefighters have very easy availability to large volumes of water.

### *The old well*

The old community well, drilled by Johnny Day as an amenity for all property owners on Camino Perdido, is in fact on this property. As mentioned above, it's been abandoned and unused since 2003. We have taken no particular steps to do anything with pump house and tank – it would be possible to dump a load of gravel into them to fully seal them, but we have never found either to be in our way and thus have never taken that step.

Legally, there is a corresponding easement on the property for the well and its storage tanks, which is also effectively abandoned. Given that we have never used this part of the property for anything other than propane delivery truck access, we've never felt the need to have the easement canceled.

We have discussed it with a lawyer however. Our understanding of the process (although we are not lawyers) is that one would need to draw up a legal statement of easement cancelation, approach all property owners who were served by the old well, and have them sign that agreement for their properties, and then record those with the county. But, until anyone wishes to do anything with that part of the land, this is all moot.

Net/net, we viewed this whole thing as just a historical quirk, rather than anything which had any effect on our enjoyment of the house and its land.

### *The unfinished well*

After we had bought the house in 2004, we also bought the adjacent acre, which was then owned by Stetson Edmunds, one of the grandchildren of Kristine Selph. That acre has a part drilled well on it. He told us that there had been a well drilled to about 600 or 700 feet (i.e more than 50% of the typical well depth in this area) and that project was abandoned due to disagreements among the family. Separately, we heard from a completely different individual who lived up in the area at the time and he told us essentially the same thing.

We were told by both individuals that this well is steel cased, and thus even though it was never finished, it can be drilled to the required depth without starting from scratch. We've seen the wellhead and it does indeed appear to have been steel cased, and it looks as though it's an 8" casing. (The minimum that can be redrilled is apparently 6".)

We are conveying this additional acre with the main house and thus anyone who wanted the comfort of a full-time well could straightforwardly have this well extended to the required depth and brought online.