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Research Paper

Disaster from migration of digging wells to drilling

Management

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ABSTRACT

Water well is an excavation or structure created in the ground by digging, driving, boring or drilling to access groundwater in underground aquifers. Hacking at the ground with a pick and shovel is one way to dig a well. If the ground is soft and the water table is shallow, then dug wells can work. Historically, dug wells were excavated by hand shovel to below the water table until incoming water exceeded the digger's bailing rate. There is a Need for Migration of digging wells to Drilling wells due to Widely dispersed throughout the country, Very competitively priced, undertaken without any technical specifications or standards. Although there is a advantages in drilling well mostly it affects the humans.

Introduction:

There is a Need for Migration of digging wells to Drilling wells due to Widely dispersed throughout the country, Very competitively priced, undertaken without any technical specifications or standards. This paper deals with , Although there is a advantages in drilling well mostly it affects the humans.

From wikipedia:

Water well is an excavation or structure created in the ground by digging, driving, boring or drilling to access groundwater in underground aquifers. The well water is drawn by a pump, or using containers, such as buckets, that are raised mechanically or by hand.

Wells can vary greatly in depth, water volume and water quality. Well water typically contains more minerals in solution than surface water and may require treatment to soften the water by removing minerals such as arsenic, iron and manganese.

Types of wells

1. Dug wells

Hacking at the ground with a pick and shovel is one way to dig a well. If the ground is soft and the water table is shallow, then dug wells can work. Historically, dug wells were excavated by hand shovel to below the water table until incoming water exceeded the digger's bailing rate . The well was lined with stones, brick, tile, or other material to prevent collapse, and was covered with a cap of wood, stone, or concrete. They cannot be dug much deeper than the water table -- just as you cannot dig a hole very deep when you are at the beach... it keeps filling up with water!

2. Drilled wells

Most modern wells are drilled, which requires a fairly complicated and expensive drill rig. Drill rigs are often mounted on big trucks. They use rotary drill bits that chew away at the rock, percussion bits that smash the rock, or, if the ground is soft, large auger bits. Drilled wells can be drilled more than 1,000 feet deep. Often a pump is placed at the bottom to push water up to the surface.

Need for Migration of digging wells to Drilling wells:

- Widely dispersed throughout the country.
- Very competitively priced.
- undertaken without any technical specifications or standards.
- Completely unregulated by the state.
- Largely unsupervised by professional engineers or hydrogeologists
- Lack of Labour facilities.
- Time Consumption.

Disaster by drilling wells

√ Even as the death of a four-year-old girl, Mahi, who was trapped for 86 hours in a borewell in Gurgaon has shaken the collective conscience, such tragedies in the State are unlikely, given that the average diameter of borewells is too small for any child to fall through.

√ About three months ago in Madurai 10 persons, including women and children, were killed when a passenger van fell into a deep open well near Thirumangalam. Jolted into action, the district administration and the police department launched a joint survey to identify open wells and ordered the construction of barrier walls or closure of dysfunctional ones.

Safety warnings for hand dug-wells

- **Never work alone**. The excavator in the bottom of the well should have a buddy at ground level above, on guard to assist if needed. While someone is working down the well there must always be someone in attendance at the top. Never leave someone unattended at the bottom of the well.
- **Signalling between well excavator and people at ground level**: A system may need to be developed for signalling between people at the bottom and top of the well for lowering and raising equipment and people. Make sure everyone understands these signals and there is no miscommunication.
- **Check all ropes** and hand-dug-well digging equipment every day at the start of work
- **Rope knots**: When using a rope to lower or lift something from the well, knots should be made along the rope at metre intervals to stop the rope slipping through your hands;
- **Earth lifting buckets**: Ensure that the handle of the bucket is firmly fixed and cannot slip off;
- **Lowering worker into the dug well**: If possible, always use a windlass to lift and lower materials. Use a windlass with two handles and therefore two people if a digger is lowered or lifted. If one of the people loses the control of his handle, the digger will not fall back in the well because the other still controls his side.
- **Protect edges of the top of the well opening** during construction: Put a plank across the edge of the opening to the shaft, so that people and buckets can be lowered over the edge without wearing away the ground at the side and causing it to cave in;
- **Steps in well shaft sides?** Cut steps into the side of the shaft to make it easier for people going up and down the well. This is only possible if the soil is strong enough to hold the weight of a person. When you doubt: do not make them! [When the well digging has been completed and it is being lined, a few well builders provide stepping stones (in a stone lined well) and handles, or steel rungs and handles to permit the well to be accessed by climbing if necessary. Usually people rely on a windlass and rope.]
- **Well digger head protection**: Always wear a helmet in case something falls down in the well;
- **Well digger foot protection**: Be careful while loosing the soil in the well with the long chisel. Don't cute off your toes! If possible wear shoes with a metal nose protection.
- **Safety of air supply at the bottom of a hand dug well**:

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In narrow wells more than 15 metres deep, there may be a problem having fresh air at the bottom of the well. This is very dangerous and even poison gasses may appear. Air circulation can be helped by raising and lowering leafy branches in the shaft to 'stir up' the air. The best way is to use a ventilator to get fresh air in the well. This ventilator can easily be made by a local workshop and exists of local available materials.

- **Handling soil & rocks dug out of the well**: Heap excavated soil more than one metre from the edge of the shaft so that as the pile grows, it will not fall back down the well;
- **Hand dug well site safety**: Put a fence or some sort of barrier around the digging site to stop people and animals falling in; when the well is completed it should have a child-proof surrounding fence and cover.

Additional Dug Well Safety Advice [Opinion of InspectAPedia]

- Provide an above-ground wall around the completed well to prevent children and animals from falling into the well - a drowning hazard.
- Provide a safety screen over the above-ground wall to prevent children from falling in to the well
- Provide a child-safe heavy, secure cover at ground level for dug wells with no above-ground wall or for any below-ground well pit. At a Connecticut home in the U.S. our clients, whose family included small children, was worried about lead paint hazards as their foremost concern. We arrived early and had already made a note of a rotting and unsafe cover over a hand-dug well.

The client arrived. Her seven-year-old son leapt from the family station wagon and made a beeline for the old hand pump atop the well. As he began jumping up and down, pumping the lever, we ran to him and scooped him off of the well top just before the entire rotting cover fell into the dug well. Our view was that this was an immediate and severe safety hazard next to which the lead paint problem was less pressing.

- Direct surface runoff away from the well and test the water frequently for potability and for other surface-borne water contaminants.
- **Beware of hand dug well collapse hazards** - do not ever enter a hand dug well unless you are properly trained and do not work there alone.
- **Test hand dug well water regularly for potability** - since these wells commonly have sanitation issues.

Conclusion:

From the above its clear that the digging of wells is a best course Of action to any other fields like irrigation, sanitation etc., compared to the drilling of wells using the modern technologies and various factors which affects the humans due to migration of digging wells to drilling wells.

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