

Air bursting technique to revive water wells

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The Western Region Municipality has begun applying air bursting technique to revive ground water wells in the region, said Mahmoud Humaid Al Mansoury, general manager of the municipality. The technique is being used as the wells are drying out.

The water well reviving technique is utilised on the basis of operation and maintenance contracts, which are affiliated to the Theme Entertainment Park for Families in Madinat Zayed in the Western Region.

The causes of the problem regarding the wells include the formation of a saline crust, which results in the closure of the water well filters, Al Mansoury said.

Among 80,000 wells in the UAE, 13,000 are in the Emirate of Abu Dhabi and 12,000 are in Sharjah. Most of these are at the risk of depletion and comprise high salinity, according to a scientific study conducted by the UAE University.

The groundwater in the UAE is drying out fast and today fresh water is available only after 100 metres below the ground level because of prolonged drought conditions. About 40 per cent of the wells in Fujairah and other Eastern Region are also affected.

A layer of bacterial mud is being formed in the wells resulting in multiplication of certain types of bacteria and subsequently in the closure of the filters. This is in addition to the closure of the filters by digging mud immediately after completion of drilling as well as non-disinfection and improving the well properly, Al Mansoury said.

Moreover the water thickness inside the well is insufficient and re-feeding is weak due to the weakness of the properties of the layers carrying the ground water. Other factors also include closure of the filters with plant roots, which grow near the well, he said.

Outburst of sands, filter breakdown, fall of objects such as pipes inside the well which hinder lowering the pump also can be reasons.

Methods of air bursting

The municipality used to follow several ways to maintain water wells such as using compressor to lift sand and clean the filters, brushing and air jetting as well as plugging.

But recently the most advanced and modern way of air bursting is introduced to maintain the ground water wells, which the traditional methods failed to service. This technique is an innovation of a US company.

Explaining the method, he said a special device or apparatus is lowered into the well after filling it with compressed air (or a sluggish gas). The amount of required compression is controlled before air bursting, which is done suddenly in the place needed to be maintained.

Al Mansoury said the air bursting creates whirlpools or high-speed pulsations that hit and break up the salty crust or the bacterial mud. The filters are cleaned and burst opened for water to flow smoothly.

The Theme Entertainment Park for Families in Madinat Zayed had conducted an air bursting on trial basis in the water well No 53, which was abandoned after the water dried up.

The traditional way failed to activate the water well but the new method had proven success and the well was full of water again. The water production of the treated well was seen as far better than other wells, Al Mansoury said.

It also used chemicals after taking into consideration that the optimal way for handling each and every case depends on what is the problem, its position inside the well and the scale of the problem, to later, select the best methods to solve it.

He said the best way to understand and identify the problem inside the well is by television detection.

Al Mansoury said by lowering down a CCTV camera to accurately shoot the well, the problem can be identified to solve it.

The percentage of this method varies as per the magnitude of the problem.