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Assignment

Question

1. Briefly describe how a productive borehole can be sited and developed in fractured basement complex regions?

**GEOLOGICAL TRIANGULATION – MAPS,**

**OBSERVATION AND GEOPHYSICS**

For an accurate assessment of the potential for groundwater

at a village it is important not to rely on just one technique

or approach. Maps can often be wrong, community

discussions can be misleading and geophysical surveys

cannot be interpreted properly unless the geological

environment is known first. An approach that has been

used successfully in many groundwater projects is to use a

combination of maps, observation and geophysics. We

have called it geological triangulation.

1. **Maps**. Villages should be located accurately on

available geological and topographic maps. The co-

ordinates of each village are determined using a global

positioning system (GPS). Once located, the map

provides an indication of the basic geology at the

village site.

2. **Observation**. The local geology must be examined

with care and discussed with the local community. The

nature of the rocks should be noted. Local wet and dry

season sources of water need to be visited, as should

any locations that the community considers as possible

groundwater sources. Rock samples need to be

collected from local rock exposures; and rock spoil

from shallow wells examined. More information on

carrying out village observation is given in Section 4.2.

This geological information should be used to up-date

scanty map information.

3. **Geophysics**. Geophysical surveys can be undertaken at

sites based upon geological observations made within

the village. The type of geophysical survey depends on

the rock types present. The survey results should

support the observation data, confirming the type of

rock present. The survey results can then be collated

with observed data to identify targets for boreholes or

wells

1. What are the disadvantage of large dam projects?

**Disadvantages Of Dams**

i. Building a dam is very expensive, the government needs to ensure that strict guidelines are followed and a very high standard is maintained.

ii. They must operate for many years in order to become profitable enough to compensate for the high building cost.

iii. People residing in villages and towns in the nearby area, where there are chances of flooding, have to be relocated. They lose their businesses and farms.

iv. Sometimes people are removed forcibly to set up hydro-power plant and it poses a serious ethical concern.

v. The building of large dams can cause serious changes to the earth’s surface and lead to geological damage. It can trigger frequent earthquakes, however, modern planning and design of dams have reduced the possibility of occurrence of certain disasters.

1. What are the effects of water pollution on the environment?

**Effects Of Water Pollution On The Environment**

i. **Destruction of biodiversity**. Water pollution depletes aquatic ecosystems and triggers unbridled proliferation of phytoplankton in lakes — eutrophication —.

ii. **Contamination of the food chain**. Fishing in polluted waters and the use of waste water for livestock farming and agriculture can introduce toxins into foods which are harmful to our health when eaten.

iii. **Lack of potable water**. The UN says that billions of people around the world have no access to clean water to drink or sanitation, particularly in rural areas.

iv **Disease**. The WHO estimates that about 2 billion people have no option but to drink water contaminated by excrement, exposing them to diseases such as cholera, hepatitis A and dysentery.

v. **Infant mortality**. According to the UN, diarrhoeal diseases linked to lack of hygiene cause the death of about 1,000 children a day worldwide.

1. What is a suitable approach to decontaminate river water, such as the Ureje River in Ado-Ekiti, which gets polluted daily by domestic and agricultural effluent?

i. **Industrial Treatment**: Before making the water fit for re-use or disposal, it needs to be treated correctly in the water treatment plants. A technically advanced water treatment plant for industrial treatment can be helpful to use water for numerous purposes. Such plants reduce the amount of toxicity of waste and various harmful chemicals in water. Once treated, water becomes ready for various types of uses.

ii. **Denitrification**: The process named Denitrification is mainly used to eliminate the nitrogen elements from sewage and municipal wastewater. Apart from preventing the leaching of nitrates in soil, it equally stops the groundwater from getting easily contaminated. This added benefit proves helpful for many purposes.

iii. **Ozone Waste Water Treatment**: Considered one of the most popular methods of purifying contaminated water now, Ozone Waste Water Treatment has already gained ample popularity in the African region like it does in rest areas. In this method, pollutants and chemicals in water are broken down by an ozone generator. In addition to that, ozone oxidizes pollutants such as bacteria, molds and organic material from the contaminated water. This is how water is turned usable.

iv **Septic Tanks**: Septic tanks are the tanks which consist of one or more concrete or plastic tanks of between 4000 and 7500 liters. They are usually employed to treat the sewage waste at various places or locations instead of treating that in any plant or sewage system. This particular method is used at individual building levels thus anybody can take such initiatives for environmental safeguard on their personal capacity. In addition to that, sewages are usually separated into solid and liquid components and thus treated separately for better outcomes.