FAQ's

Define biophysical environment.

The **biophysical environment** is the biotic and abiotic surrounding of an organism or population, and consequently includes the factors that have an influence in their survival, development and evolution. The biophysical environment can vary in scale from microscopic to global in extent. It can also be subdivided according to its attributes. Examples include the marine environment, the atmospheric environment and the terrestrial environment. The number of biophysical environments is countless, given that each living organism has its own environment.The term *environment* is often used as a short form for the biophysical environment. The expression "*the environment*" often refers to a singular global environment in relation to humanity.

What is sustainable development?

Sustainable development is a process for meeting human development goals while sustaining the ability of natural systems to continue to provide the natural resources and ecosystem services upon which the economy and society depends. While the modern concept of sustainable development is derived most strongly from the 1987 Brundtland Report, it is rooted in earlier ideas about sustainable forest management and twentieth century environmental concerns. As the concept developed, it has shifted to focus more on economic development, social development and environmental protection.

Sustainable development is the organizing principle for sustaining finite resources necessary to provide for the needs of future generations of life on the planet. It is a process that envisions a desirable future state for human societies in which living conditions and resource-use

continue to meet human needs without undermining the "integrity, stability and beauty" of natural biotic systems.

Sustainable development, or sustainability, has been described in terms of three spheres, dimensions, domains or pillars, i.e. the environment, the economy and society. The three-sphere framework was initially proposed by the economist René Passet in 1979.
Environmental sustainability concerns the natural environment and how it endures and remains diverse and productive. Since natural resources are derived from the environment, the state of air, water, and the climate are of particular concern. The IPCC Fifth Assessment Report outlines current knowledge about scientific, technical and socio-economic information concerning climate change, and lists options for adaptation and mitigation. Environmental sustainability requires society to design activities to meet human needs while preserving the life support systems of the planet. This, for example, entails using water sustainably, utilizing renewable energy, and sustainable material supplies.

What is water conservation?

Water conservation encompasses the policies, strategies and activities made to manage fresh water as a sustainable resource, to protect the water environment, and to meet current and future human demand. Population, household size, and growth and affluence all affect how much water is used. Factors such as climate change have increased pressures on natural water resources especially in manufacturing and agricultural irrigation.

The goals of water conservation efforts include:

- Ensuring availability of water for future generations where the withdrawal of fresh water from an ecosystem does not exceed its natural replacement rate.
- Energy conservation as water pumping, delivery and waste water treatment facilities consume a

significant amount of energy. In some regions of the world over 15% of total electricity consumption is devoted to water management.
- Habitat conservation where minimizing human water use helps to preserve freshwater habitats for local wildlife and migrating waterfowl, but also water quality.

The key activities that benefit water conservation are as follows :

- Any beneficial deduction in water loss, use and waste of resources.
- Avoiding any damage to water quality.
- Improving water management practices that reduce the use or enhance the beneficial use of water.

Define the following:
a) RWH
b) ASR

Rainwater harvesting is the accumulation and deposition of rainwater for reuse on-site, rather than allowing it to run off. Rainwater can be collected from rivers or roofs, and in many places the water collected is redirected to a deep pit (well, shaft, or borehole), a reservoir with percolation, or collected from dew or fog with nets or other tools. Its uses include water for gardens, livestock, irrigation, domestic use with proper treatment, and indoor heating for houses etc. The harvested water can also be used as drinking water, longer-term storage and for other purposes such as groundwater recharge.
Rainwater harvesting provides an independent water supply during regional water restrictions and in developed countries is often used to supplement the main supply. It provides water when there is a drought, can help mitigate flooding of low-lying areas, and reduces demand on wells which may enable groundwater levels to be sustained. It also helps in the availability of potable water as rainwater is substantially free of salinity and other salts. Application of rainwater

harvesting in urban water system provides a substantial benefit for both water supply and wastewater subsystems by reducing the need for clean water in water distribution system, less generated stormwater in sewer system, as well as a reduction in stormwater runoff polluting freshwater bodies.

Aquifer storage and recovery (ASR) is the re-injection of potable water back into an aquifer for later recovery and use. ASR has been done for municipal, industry and agriculture use.An aquifer is a geological formation or group of formations or part of a formation that is capable of yielding a significant amount of water to a drinking water well or spring. (ASR) are processes that convey water underground. These processes replenish ground water stored in aquifers for beneficial purposes. Although the terms are often used interchangeably, they are separate processes with distinct objectives.

AR is used solely to replenish water in aquifers
ASR is used to store water which is later recovered for reuse

Water suppliers seek ways to supplement water sources because of increased demand and local weather changes. For these reasons water suppliers and states are evaluating ASR technology. Objectives of ASR projects are to:

- Store water when it is readily available
- Recover water during dry or high demand periods

ASR projects are increasing in number nationwide, especially in areas with potential water shortages. Several methods of introducing water into an aquifer exist. Conventional methods of AR and ASR include:

- Surface spreading
- Infiltration pits and basins
- Injection wells