

COURSE COO3

CERTIFICATE IN WASH

ASSESSMENT 1

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Question 1 Opposition of large dams

Displacement of people

Large dam requires very large land which lead to displacement and fragmentation of village communities to make way for dam construction and often result into poor hygiene and influenza in the resettled area. The resettled people some time face hostility from the host communities.

Reduction in river flows

the reduction in river flows may resulted in large increase in aquatic weeds upstream and These weeds promote growth of aquatic disease- carriers, such as mosquitoes and snails which may increases Outbreak of water borne diseases such as schistosomiasis, leishmaniosis and malaria. Also reduced river flows can disrupt the ecological system of the river.

Endangered livelihoods

Large dam construction disrupts livelihoods of the communities who depends on fisheries, farming activities, as it leads to reduction in crop yields due to less silt and alluvial matter being deposited downstream. This may affect the health and nutritional standards of the people and increased poverty within the community downstream.

Uneven distribution of costs and benefits.

Locals people bear costs of dislocation and removal of their business to create means for dam construction and when building is finalised may resulted into no local benefits and other large scale electricity clients reap benefits.

Economical constraint

The construction of large dams Involves huge cost of resources i.e. money, time and labor force mobilization. Long periods are taken during feasible studies/survey which involves a portion of technicalities and high professionalism that are paid highly.

Loss of natural habitants

Dam construction leads to cutting down of forests which disrupt the natural habitats and in turn effects the ecological system of the river.

Block access to aquatics

Migratory fish species and aquatic movement downstream can be interrupted by dam.

Sediment transportation

The transport of sediment along the river is disputed which affects the morphology of the riverbed downstream. The buildup sedimentation in the reservoirs reduces the capacity of the dam and expose the accumulation of toxic materials which may pose the emissions of greenhouse gases.

Question 2 Benefits of large dams**Water for drinking and industrial use**

Large dams offer abundant storage for water during periods of surplus and utilization during lean periods when water availability is scarce. Large dams perform a great role in meeting the drinking water necessities of the people and industrial needs. Hence providing water for municipal consumption and Revenue from sale of water.

Dams provide cheap, clean and renewable source of energy. Hydroelectric power generated from dams are economically viable and reliable energy that may enhance socio-economic development of a nation.

Inland navigation

Large dams increase water depth upstream which may encourage navigation. The movement of vessels and devices may become more easily in the rivers system. This will expand relocation of vital service and merchandises to people.

Recreation

Large dams provide prime recreational facilities throughout the year which may Lift tourism dams offers leisure occasions like boating fishing and game visiting.

Employment opportunities

large dams providing employment opportunities both to locals and international expert i.e. dam construction works, New roads, telecommunication, health clinics, community-based rural

development projects and tourism development. Hence bringing about socio-economic development.

Question 3 Other technologies through which People can access water supply in cities and rural areas

Private excavated ground water wells

These are holes in the ground dug by shovel and backhoe. They are lined with stones, brick, or other material to avert collapse. Dug wells have a big diameter and are shallow roughly 10 to 30 feet deep. These wells are physically operated with the help of rope and bucket to lift water. Private ground water wells usually supply water to an individual residence.

Shallow Driven ground water wells

These are constructed by driving pipe into the ground. Driven wells are cased continuously and shallow approximately 30 to 50 feet deep. These shallow wells offer low cost and usually reliable source for water supply which are install with a hand pump. The driven wells water systems can serve more than one residence.

Boreholes /production ground water wells

Boreholes are wells constructed by rotary-drilling machines. These wells draw water from aquifers about thousands of feet deep and Acceptable yield that can cater for estimated 300 people per installation. submersible pumping unit is placed inside the well casing and connected to a power source on the surface where water is pumped to an elevated storage and then distributed through pipe line to yard taps and public post

Protected Springs

Springs offers a major source of domestic water supply in low-income areas where the majority of the urban population lives. The natural spring can be excavated and filled with stones and gravel. Then it can cover by a plastic sheet in turn covered by earth. a concrete wall through which an iron

pipe leads the water to the tap point is constructed in front of the filter. There is no valve on the pipe and The excessive water is led away through a ditch.

Gravity Flow Systems

This is where a clean water come out from ground normal on mountainous and highlands areas. the water is collected in to a sedimentation tanks for a retention period of about 20 -30 minutes than water can be allowed to flow to a reservoir tank and distributed through pipe line to tap stands for the community to access for domestic consumption.

Hauled water system/ water trucking

These systems comprise of water trucking (water tanker) and a storage tank that is filled with water from a source located off the buildings. Water from this tank is then pumped into a pressure tank/elevated tanks of certain quantity and into the home's distribution system.

Question 4 Yes, there has always been a significant difference between water quality in shallow wells and boreholes as explained below.

Shallow wells

Draw from the ground water nearest the land surface, which may be directly affected by farmstead activities. Polluted surface water can infiltrate into the soil and quickly affect a shallow well that was not properly constructed or is located in a coarse-textured soil that easily conducts water. Aquifers located near the surface are more vulnerable to potential contamination. The type of soil material overlying an aquifer also influences its vulnerability. Generally, coarse-textured soils over a shallow aquifer allow less protection.

Boreholes

In contrast boreholes are usually considered to be very deep wells which are more protected from surface contamination by the soil, water movement in deep bedrock aquifers is very slow and takes a considerable distance underground over a long time, which allows Many potential contaminants

to be dissipated and degraded by soil microorganisms before reaching the borehole well. This offers greater protection to the borehole water quality.

Question 5 Frequency of Testing wells

The deep wells testing required testing every 6 months. Or a minimum of once per year. Whereas shallow wells should be tested seasonally when There are known problems with ground water in the area such as flooding, land disturbances due new construction or industrial activity, repair any part of your well system, change in your water quality i.e. odor, color, taste and When the well cap has been taken off the well exposing the well casing interior.

In my opinion If bacteria are found in my well, I will apply shock chlorination to disinfect the well. And If the source of bacterial problem is from a leakage adjoining septic system. I will require water treatment like UV, or a chlorine drip filter.

Question 6 Diseases related to mismanagement of water.

Diarrhea

Water contaminated with human faeces for example from municipal sewage, septic tanks and latrines is of special concern. Animal faeces also contain microorganisms that can cause diarrhea. Diarrhea is a symptom of infection caused by a host of bacterial, viral and parasitic organisms most of which can be spread by contaminated water. It is more common when there is a shortage of clean water for drinking, cooking and cleaning.

Cholera, Shigellosis and Hepatitis A are some diseases related to of water

These Water-borne diseases are spread by mismanagement water where by contaminating drinking water systems with faeces and urine of infected animals or people. The spread of contaminated water is likely to happen where private and public drinking systems get their water such as surface waters - creeks, rivers, lakes, and rain. These sources of water may be contaminated by infected animals or people. Or Runoff from Landfills, Sewer pipes, Septic fields and Industrial or residential developments

Question 7 The effects of water mismanagement on the economy of country.

A short supply of water will harm the agriculture industry. There will be changes in what is produced, where items are produced, how efficiently water will be used in the process and food prices could spike.

A lack of water will also lead to more conflicts, Floods and droughts typically lead people to migrate from impoverished areas to more prosperous areas, which could lead to increased social tensions which will harm local economies

The mismanagement of water resources could lead to contamination of water which can cause diarrhea diseases which is associated with increased mortality rates, malnutrition that can hinder children from going to school and severely reduce their potential wages in the future hence affecting the economy of the country.

Question 8 Characteristics of good rainwater harvesting system

Catchments:

The catchment of a water harvesting system is the surface which directly receives the rainfall and provides water to the system. It can be a paved area like a terrace or courtyard of a building, or an unpaved area like a lawn or open ground. A roof made of reinforced cement concrete, galvanized iron or corrugated sheets can also be used for water harvesting.

Coarse mesh/filter

The filter is used to remove suspended pollutants from rainwater collected over roof. A filter unit is a chamber filled with filtering media such as fibre, coarse sand and gravel layers to remove debris and dirt from water before it enters the storage tank.

Gutters

Channels all around the edge of a sloping roof to collect and transport rainwater to the storage tank. Gutters can be semi-circular or rectangular and could be well supported so they do not sag or fall off when loaded with water.

Conduits

Conduits are pipelines or drains that carry rainwater from the catchment or rooftop area to the harvesting system. Conduits can be of any material like polyvinyl chloride (PVC) or galvanized iron (GI), materials that are commonly available.

First-flushing

A first flush device is a valve that ensures that runoff from the first spell of rain is flushed out and does not enter the system. This needs to be done since the first spell of rain carries a relatively larger amount of pollutants from the air and catchment surface.

Storages

These tanks can be of any shape, size and the material of construction can be Reinforced cement concrete, Ferro cement, masonry, plastic (polyethylene) or metal (galvanized iron) sheets are commonly used. These tanks can be constructed above ground, partly underground or fully underground. Some maintenance measures like cleaning and disinfection are required to ensure the quality of water stored in the container.

Recharge structures

Rainwater may be charged into the groundwater aquifers through any suitable structures like dug wells, bore wells, recharge trenches and recharge pits.

Question 9 Steps for state and water management to promote rain harvesting:

The State Governments or water management should take legislative steps to enforce rules to ensure maximum possible collection of rainwater.

The state or water management should adhere to rainwater harvesting rules while issuing building permits all new buildings like houses, building complexes, schools and government buildings.

The state or water management should establish resource Centre with Government and non-government agencies for coordinating, educating and demonstrate different working models and provide assistance to the public for designing rainwater harvesting.

The state and water management authorizes should constrict and discourage the use of private wells for crops and animals as well as for domestic use domestic.

The state or water management should develop Rainwater harvesting programs that can be implemented and managed by local communities i.e. building small dams and embankments to trap rainwater at low-cost.

The state or water management should provide assistant in the rehabilitation of the existing public rainwater harvesting system to improve performance and productivity.

Question 10 Recycling/reuse of water.

I have agreed with the idea of recycling used water.

Reusing and recycling industrial water, wastewater and Greywater can ease the pressure on our water resources and avoid the need to discharge to the sewer or environment. The recycle and reuse of water can be used for a wide range of purposes including industrial uses (e.g. cooling or material washing) or non-industrial uses (e.g. irrigation or toilet flushing)

However, the reuse of water may need a safe and sustainable way to identify, assess and appropriately manage the health and environmental risks.

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