

CHAPTER - III

**INTERACTION OF GROUND WATER AND
SURFACE WATER**

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3.0 GENERAL

Hydrological processes involved in managing water resources needs to understand in detail for harvesting rain water through various techniques. The ground water and surface water interact throughout all types of landscapes from mountain to sea. The ground water moves along flow paths of varying lengths in transmitting water from area of recharge to discharge.

The small scale geologic features in the bed of surface water bodies & lakes affect recharge patterns. The size, shape and orientation of sediments & grain sizes in surface waterbeds affect seepage pattern. Often the surface waterbed consists of sand; the inflow seepage is greatest at the shoreline & decreases away from it. The geology of land units of varying permeabilities also affect water seepage in surface waterbeds.

The ground water seepage to surface water is greatest near shore. Infiltrating rain water passes rapidly through a thin unsaturated zone adjacent to the shoreline which produces a mound of water table adjacent to surface water body as “focussed recharge”, which results in increased ground water inflow to surface water bodies.

The ground water recharge therefore is commonly focused initially where unsaturated zone is relatively thin at the edges of surface water bodies and beneath depressions in the land surface.

3.1 INTERACTION OF GROUND WATER AND STREAM

The streams interact with ground water in all types of landscapes. The streams lose water to ground water by outflow through the streambed. For surface water to seep into ground water, the altitude of water table in the vicinity of stream should be lower than the altitude of stream water surface. The interaction between ground water and stream takes place in nearly all streams. Depending upon the magnitude, intensity, and frequency of stream flow and increase in stream stage, some streams and adjacent aquifers are in continuous interaction. If level of water in stream is more than its bank, the flood water recharges ground water throughout the flooded area.

The reservoirs behind check dams are designed primarily to control flow & proper distribution of surface water. Like stream, such reservoir (lakes) also have fluctuating water levels & also loose water to water table to recharge ground water. The interaction of ground water and surface water is also shown diagrammatically in Figure3.1.

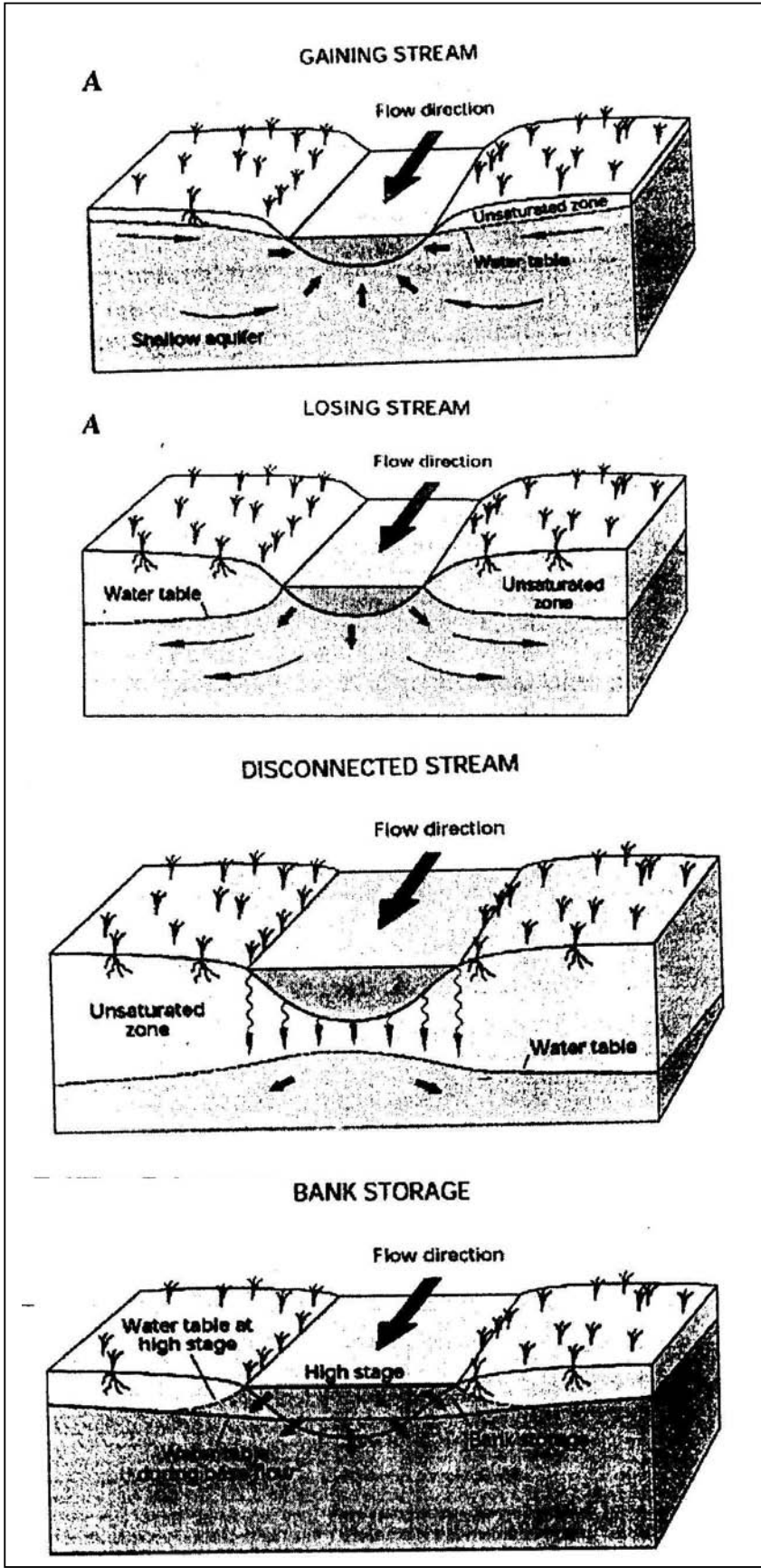


Figure 3.1: Interaction of Ground Water and Surface Water