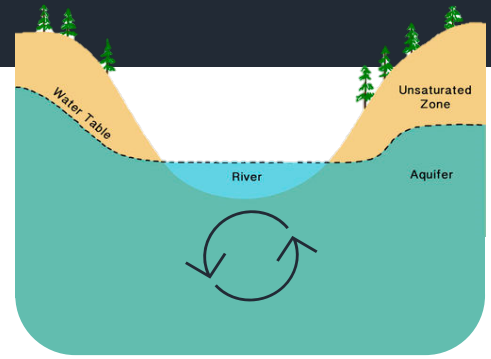


WHAT ARE GROUNDWATER – SURFACE WATER INTERACTIONS

Groundwater – surface water interactions play an important role in the water availability of both surface water bodies, like rivers and lakes, and underground water resources we call **aquifers**.

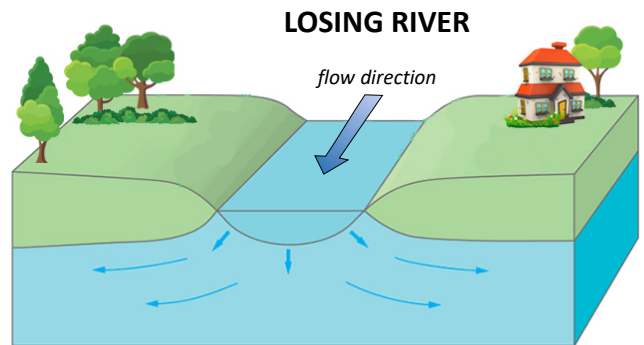
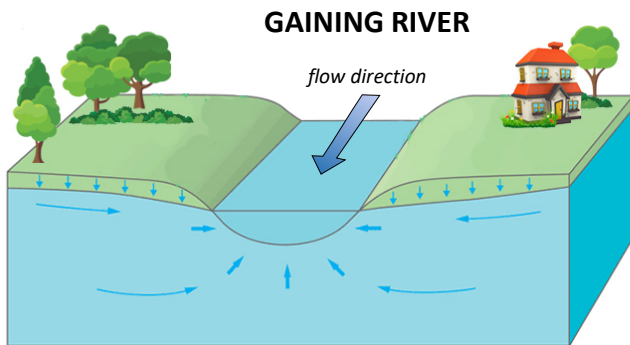
Researchers have found that there is a constant give and take of water between rivers and shallow aquifers.



Have you noticed how during the dry season some rivers still flow? The water flowing in these rivers is most likely groundwater being transmitted from an aquifer! Rivers create channels that dig into the aquifers, and when there is no rain providing water to the rivers, the aquifer's water level is exposed, giving water to the rivers and creating their **baseflow**.



During wet seasons, the river stage increases. If it goes significantly above the aquifer's water levels, the hydraulic pressure in the river increases, changing the direction of this interaction. Now the river recharges the aquifer!



From the river's standpoint, these two situations are called gaining or losing conditions. When the river receives water from the aquifer, it is called a gaining river, and when the river recharges the aquifer, it is called a losing river. The flow direction depends on the difference in the water levels between the river and aquifer, which is known as the **hydraulic gradient**.



- Many ecosystems depend on these interactions as they can create specific conditions for different organisms to live in by varying the water temperature, water chemistry, and water flows.
- It is important to study these interactions to enhance ecosystem vitality and minimize harmful alterations to water quality.