from the top of the saturated zone to point of measurement. Decreasing fluid potential near the top of saturated zones is generally good evidence of recharge in the area.

In the so-called "zone of lateral flow", which may be commonly extensive only in flow systems of arid or semi-arid terrane, change in fluid potential with depth is very small, and often not detectable. It is common to experience an initial water level rise when the first saturated aquifer material is penetrated, which, unless the hole is considerably deepened and fluid potential monitored, can lead to erroneous interpretations of where in the flow system the well is situated. The reason for uniform ground-water potential with depth is that direction of flow is essentially all lateral, and hence, the vertical well flows an equipotential line. If the penetrated sequences of earth materials are relatively permeable near the air-water interface, the absence of vertical potential differences creates what has been called an "unconfined" or "water table" situation.

Another zone, closely related to the zone of lateral flow, is observed in some flow systems in Nevada. This is a region in the flow system where head or ground-water potential increases with depth, yet there is no ground-water discharge in the immediate area. This relationship seems anomalous at first glance because it suggests that matter is being destroyed, *i.e.* if water is moving upward, yet it does not leave the system, where does it go? Figure 5 illustrates how this phenomenon occurs, and that it is essentially related to an upward swing in direction of flow toward an adjacent discharge area. It occurs noticeably when significant flow is coming to the zone of discharge from depth in relatively permeable material, such as along the west side of Las Vegas Valley.

In the ground-water discharge zone, it is unusual not to observe rises in static water levels as wells are deepened. Because the zone of saturation is very near land surface, flowing or artesian wells often result if penetrated aquifers have not been extensively pumped by surrounding wells. In fully cased wells, this encounter of increased potential with depth will produce a flowing

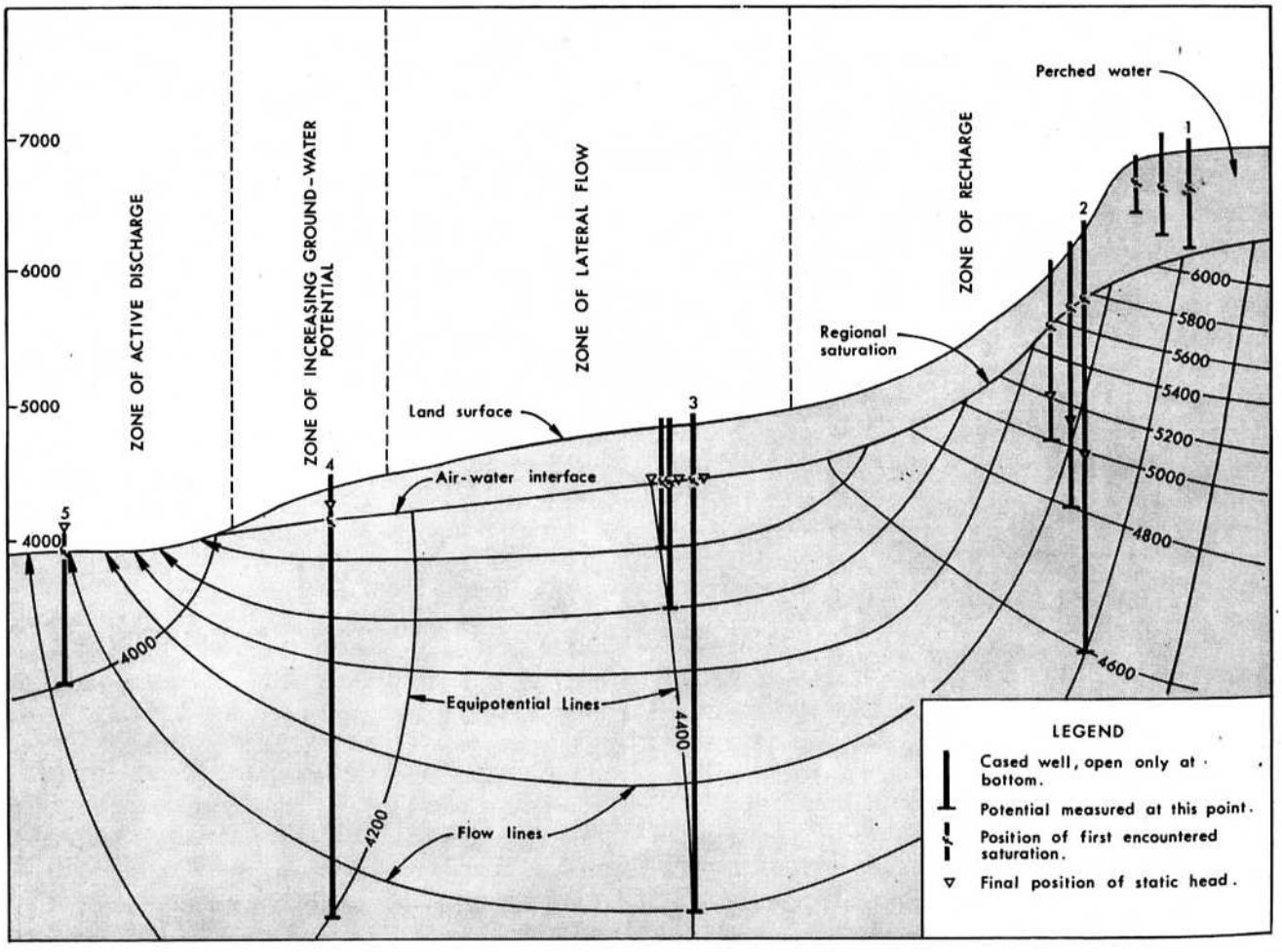

FIGURE 5 - Sketch of observed relationship in a typical Great Basin flow system