

streams decreases water availability and increases the likelihood of drought stress during the dry season. In all, the straightening and deepening of streams has little positive benefit to the environment, although it does help to alleviate flooding of urbanized areas by increasing the rate and velocity of runoff.

Strongly related to the problems associated with the channelization of streams are the problems associated with increased impervious surface within watersheds. Shown in figure 6 are typical runoff hydrographs for a natural watershed and one that has a large amount of impervious surface. As the amount of impervious surface increases, the amount and speed of waters running off the land increases. The end result of such changes is increased velocity of runoff waters, and greatly diminished purity. Couple increased impervious surface with channelization of streams, and the overall result is a fast decline in the quality and resiliency of the receiving estuaries.

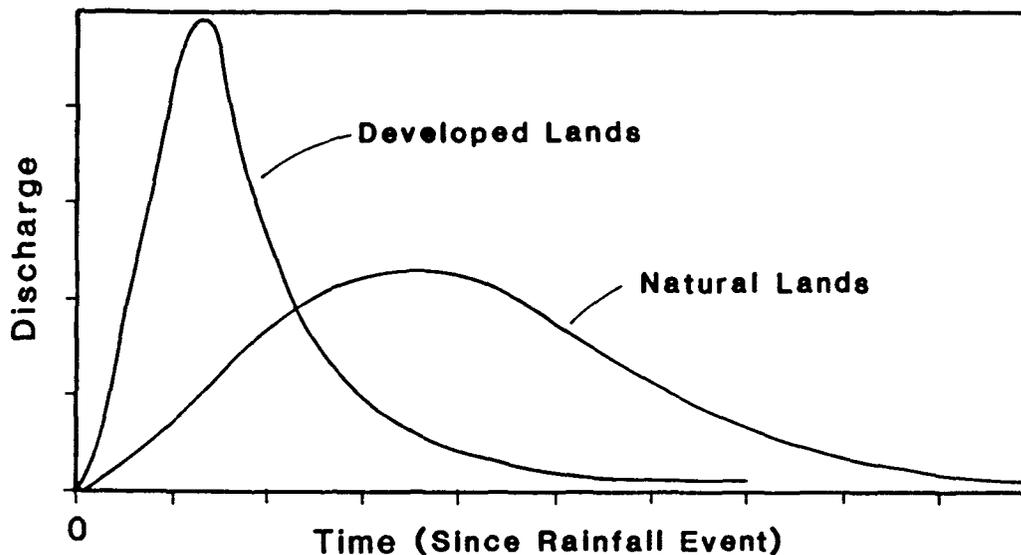


Figure 6. Typical runoff hydrograph for developed and natural lands, showing the increase in volume and rate of discharge after a rainfall because of the increased area of impervious surface.

Both the physical reorganization of the landscape during development and the reorganization that results from the release of by-products as development is complete, have a profound effect on structural and functional characteristics of the landscape and its components. When lands are paved, sodded, and built upon, and when canals are dug for "storm water control", the amount and timing of runoff are changed. When septic tanks, sewage treatment plant outfalls, and fertilizer are allowed to enter surface waters without further treatment, the quality of runoff waters and receiving water bodies are greatly affected. The lowering of ground water tables to accommodate development lowers productivity of ecological systems, decreases storage of waters, and increases the need for irrigation of crops and lawns.