

Signature of Ground-Water Contamination to a Stream

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The discharge of ground water with elevated dissolved constituents into streams can result in surface water quality problems. The purpose of this paper is to explore the relationship of flow versus dissolved constituents for gaining streams. The expected water quality signature is higher concentrations at low flow and lower concentrations at high flow. The higher concentrations occur in the stream at low flow because ground-water discharge makes up a greater percentage of the stream discharge. Lower concentrations occur at high flow because of two factors. First, gaining reaches during low flow conditions may become losing reaches at high flow. Second, the amount of ground water that does discharge to the stream at high flow makes of a smaller percentage of the stream discharge. This relationship is explored for river segments in northern Idaho and in southeastern Idaho.