

“Designated Uses for Ephemeral Streams”

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Question #7: How should flow conditions affect the designation of uses?

The Savannah River Site (SRS) is a Department of Energy facility that encompasses approximately 310 square miles in South Carolina and borders the Savannah River along its southwestern side. There is abundant wildlife and the federal government designated SRS as the nation's first National Environmental Research Park in 1972. The mission at SRS is focused primarily on support of national defense, nonproliferation, and environmental cleanup. Various ephemeral streams at the Site carry facility effluents to larger creeks that are tributary to the Savannah River. The water in these streams is soft (i.e., contains very little hardness). The combination of low hardness and ephemeral nature of these streams will result in future National Pollutant Discharge Elimination System (NPDES) permit limitations that are nearly as low as the water quality standards themselves – even though facility effluents are comprised primarily of just cooling water.

Cooling water effluents typically contain small concentrations of copper, lead and zinc due to corrosion of piping systems. It is doubtful that SRS effluents will meet future limitations for these pollutants. In fact, it is probable that SRS will be required to spend millions of dollars constructing wastewater treatment facilities in an attempt to meet them. Expenditures in this range do not seem justified since it is not clear ephemeral streams need the same level of protection as perennial streams.

Ephemeral streams contain flowing water only after rain events. Quite frequently, they are altogether dry for extended periods of time and/or are effluent dependent. Aquatic life is significantly different than that of perennial streams, making existing water quality standards developed for species living in perennial streams non-applicable. Action should be taken that will result in a more reasonable approach to regulating discharges into ephemeral streams.

For example, there needs to be a consistent definition developed for ephemeral streams. The Army Corps of Engineers says ephemeral streams contain flowing water only during, and for a short duration after, precipitation events. South Carolina says ephemeral streams are defined, natural watercourses that flow for no more than twenty-nine days in direct response to rainfall. New Mexico takes the definition a step further by saying an ephemeral stream does not support a self-sustaining population of fish.

It is often argued that site specific limits may be developed for permitted discharges into ephemeral streams; however, Environmental Protection Agency (EPA) options for development of site specific limits (e.g., water effects ratio and recalculation procedure) are not applicable to such streams. Other options such as development of site-specific water quality standards and changing the designated uses of receiving streams require development of detailed, expensive scientific justifications and regulatory revisions, making them unrealistic.

It is important that consistent, reasonable guidance be provided so that States can develop protective, yet cost-effective, NPDES Permits for ephemeral streams. EPA could lead the way by redefining ephemeral streams and prescribing logical designated uses for them in States they regulate. This would allow States with delegated authority over their water programs to follow suit. Alternatively, EPA could revise federal regulations making it less cumbersome and costly for States to change designated uses for ephemeral streams.