

## Biological Monitoring Recommendations for Springfield

(This document was provided by Brian Nodine, Missouri Department of Natural Resources, to the City of Springfield Storm Water Services Division on Nov. 14, 2007)

Macroinvertebrate monitoring by the City of Springfield and a spring 2007 study by MoDNR indicate the three sample stations; Jordan Creek, Wilson Creek, and Galloway Creek as not fully sustainable to aquatic life. Our spring 2007 monitoring resulted in Jordan and Wilson Creeks as both receiving a non-sustainable score and Galloway Creek receiving a score at the low end of partially sustainable. Because these three streams continue to receive runoff from typical urban sources, it is reasonable to assume they will not achieve full sustainability unless further measures are taken by the city to buffer these streams.

Two other streams that could be considered for biological monitoring are Fassnacht Creek and Pearson Creek. Fassnacht Creek could be sampled in the class "P" section between its confluence with Jordan Creek and Kansas Expressway.

Two sites on Pearson Creek below Jones Spring Branch have been previously biologically monitored by MoDNR during the spring of 2005. That monitoring resulted in scores of at the lowest end of partially sustainable to aquatic life. Pearson Creek is of particular concern because of the influence of Jones Spring. Ambient sediment monitoring in 1999 from Jones Spring Branch resulted in the highest levels of polycyclic aromatic hydrocarbons (PAHs) of all stream sediments collected by this project dating back to 1997 and one of only a few resulting in detectable PAHs. Several PAHs from Jones Spring Branch exceed the Probable Effect Level (PEL) and Toxic Effect Threshold (TET) in sediment quality guidelines from a 2000 paper in Archives of Environmental Contamination and Toxicology. Recent research in Austin, TX has shown PAHs to impair aquatic macroinvertebrate communities. Common sources of these PAHs are from coal-tar and asphalt sealer on roads and parking lots.

According to the city's latest NPDES annual report, Jones Spring receives drainage from a large sinkhole cluster area within the city limits. It does not appear on GIS mapping we have that Pearson Creek is currently within the Springfield city limits thus being eligible for monitoring for this particular permit, but Pearson Creek does appear to be influenced by polluted runoff from within the city.

Because of the findings in Austin, TX, sediment monitoring for PAHs at Jordan, Galloway, and Wilson Creeks could provide valuable information regarding a potential source of impairment of aquatic biological communities.