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Gills Creek, Columbia, SC, reclamation enhancement project following 1000-year flood event impacts

G Geidel*¹ and T Kohlsaatt², ¹*University of South Carolina, Columbia, SC*, ²*GCW Association, USC, Columbia, SC*.

geidel@environ.sc.edu

The Gills Creek Watershed (GCW) in Columbia, SC, is an impaired urban watershed that was severely impacted by a 1000-year flood in October 2015, when over 46 cm (18") of rainfall fell in 24 hours causing the breaching of at least 6 dams, extensive property damage and loss of life. The watershed is 19,500 ha (75 mi²), has over 110 miles of stream, a population >111,000 and is 55.8% urban land; the highest percentage of urban land of any watershed in SC. Prior to the flood, the waters were impaired and continue to be with E. coli, Pb, Hg and low DO, and the GCW had impacts attributable to urbanization such as advanced streambank erosion, wetland filling and impervious surfaces causing increased runoff. One severely flood impacted stream stretch, but which also was ditched, had severely eroded stream banks, and all prior floodplain areas filled and covered with impermeable asphalt, was partially reclaimed by the GCW Association with §319 Grants from EPA administered through the state agency, DHEC, City of Columbia funds and GCWA funds. The nearly \$1 million dollar project enhanced 261 m (856 ft) of stream banks with measures including: 1) two large infiltration/bio-retention basins allowing infiltration to groundwater and slower release as base flow; 2) mini infiltration basins; 3) boulder placement along bank to reduce sediment loads from upstream, 4) boulder placement at bank toe to reduce slope pitch; 5) daylighting of stormwater pipes to rip rapped flow channels, 6) removal of asphalt stormwater discharge flumes and replacement with step boulders creating a series of small waterfalls to aerate water (increase DO), and 7) geolifts for enhanced vegetation. Native plants will replace invasive and non-native species along reclaimed stream. Monitoring is on-going but decreased erosion, increased sediment capture, and increased wildlife observed.

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