



# Guilford Courthouse National Military Park Water Quality Summary Fiscal Year 2012

## Water quality at Guilford Courthouse National Military Park remains fair.



Bloody Run at low flow, December 13, 2012. Image by Vance Noles.

The Cumberland Piedmont Network Inventory and Monitoring Program began long-term water quality monitoring at Guilford Courthouse National Military Park in fiscal year 2004. Water quality is measured quarterly on alternate years at three sites; Hunting Creek, Bloody Run, and beginning in fiscal year 2010, Tennenbaum Spring. Based upon program requirements and findings of the water quality inventory, a set of parameters was chosen for long-term monitoring; including the field measures of water temperature, specific conductance (SpC), pH, and dissolved oxygen (DO). Samples were also collected for analysis for *Escherichia coli* (*E. coli*) and acid neutralizing capacity (ANC).

### Highlights of Fiscal Year 2012 Monitoring

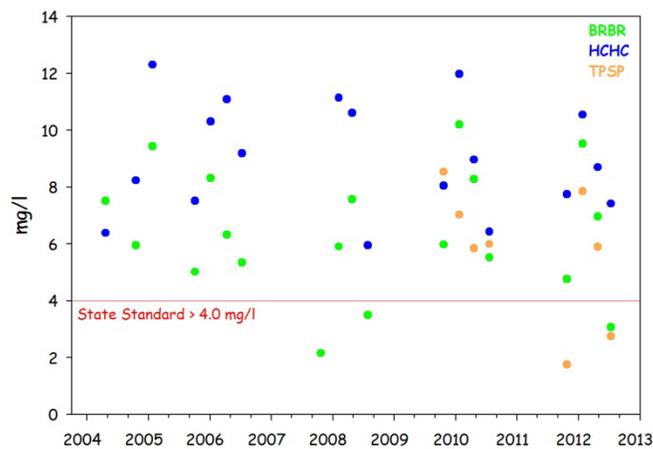
Twice at Bloody Run and Tennenbaum Spring DO levels were found below the state standard of 4.0 mg/l (see figure). The limited aeration of these small streams may account for low levels, especially during low flow periods. Low DO at these sites was accompanied by low pH, below the state limit of 6.0 standard units. The cause of depressed pH is not known but appears linked to low flow.

Once the *E. coli* USEPA recommended single sample standard was exceeded. This occurred at Hunting Creek which has a history of elevated bacteria. Hunting Creek receives water from the lakes of Greensboro County Park, home to scores of water fowl. It is likely that this animal waste is washed into the lakes and then into Hunting Creek in the form of runoff. Other times during drought conditions, wildlife are drawn to the park's water sources and thus add to the bacterial load.

### Future Monitoring

Water quality sampling is scheduled to resume in fiscal year 2014. Water quality data are available upon request to the Cumberland Piedmont Network or our website:

<http://science.nature.nps.gov/im/units/cupn/reports.cfm>



Dissolved oxygen at Guilford Courthouse National Military Park, 2004 – 2012.

### Water Quality Standards

All park waters are considered “Class WS-IV” under the Clean Water Act as promulgated by the state of North Carolina. The state currently does not impose a standard for *Escherichia coli* bacteria so we have adapted the USEPA recommendations for “Single Sample Infrequently Used Full Contact Recreation.” Other monitored parameters, ANC and SpC, are without state standards or federal guidelines.

<b>Water Temperature</b>	Not to exceed 29°C
<b>Dissolved Oxygen</b>	Not to exceed 4.0 mg/l
<b>pH</b>	Between 6.0 and 9.0 SU
<b><i>Escherichia coli</i></b>	Not to exceed 576 MPN/100ml
<b>SpC</b>	No Standard
<b>ANC</b>	No Standard

### Sampling Sites



- HCHC** Hunting Creek
- BRBR** Bloody Run
- TPSP** Tennenbaum Spring