

Discussion of Listing Method Change

In 2012 and in all prior NC water quality assessments the 10% exceedance approach was used for all numeric non-pathogen indicator water quality criteria. This method allowed for some exceedances due to errors and rare extreme conditions. The 10% approach is not in NC water quality standards, but EPA has generally accepted this method for non-toxic parameters. For toxics like metals, EPA guidance instructs states to use a greater than one exceedance in three years approach. Since the 2004 water quality assessment, EPA has requested that NC provide scientific justification for any other approach to show that the methodology is no less stringent than the NC water quality standard. In 2008 and 2010 NC provided the justification that the 10% method resulted in the same or more listings for toxics as the one exceedance in three years approach. EPA accepted this justification.

In 2013 the Environmental Management Commission approved changes to the assessment methods. These methods were used to develop the 2014 303(d) list currently out for public review. The new method uses the 10% exceedance approach and adds a 90% statistical confidence component to recognize that uncertainty levels change with sample size: The smaller the sample size, the greater the uncertainty. This approach uses a nonparametric procedure (similar to Lin *et al.* 2000) to identify when a sufficient number of exceedances have occurred that indicate an exceedance probability of 10 percent.

Lin, Pi-Erh, Duane Meeter and Xu-Feng Niu. 2000. A Nonparametric Procedure for Listing and Delisting Impaired Waters Based on Criterion Exceedances. Technical Report. Department of Statistics, Florida State University, Tallahassee, FL.
<http://www.dep.state.fl.us/water/tmdl/docs/Supdocument.PDF>