Environmental Indicators Through 2010

September 2011

Introduction and Background

The North Carolina Division of Water Quality (NCDWQ) operates a state-wide ambient monitoring network which measures the concentrations of a variety of parameters. Currently, measurements are obtained monthly from 323 monitoring stations for parameters including dissolved oxygen, turbidity, and fecal coliform bacteria. Many other parameters such as pH, specific conductance, nutrients and chlorophyll-a are also monitored. A general perspective of water quality changes can be obtained by looking graphically at dissolved oxygen, turbidity, and fecal coliform data. These water quality variables are particularly useful because there have been no significant changes in sampling or analysis techniques. Active ambient monitoring sites can be found here: http://portal.ncdenr.org/web/wq/ess/eco/ams.

Results for dissolved oxygen, turbidity, and fecal coliform bacteria were grouped by region (mountains, piedmont, and coastal plain) and graphed to depict the percentage of measurements that exceed water quality evaluation levels changed over time. (decadal[1], yearly). These graphs are based on the results from 172 currently active NCDWQ monitoring stations that were established before 1979. Since the data were collected over many years, the number of results is large enough to indicate changes in dissolved oxygen, turbidly and fecal coliform bacteria over time.
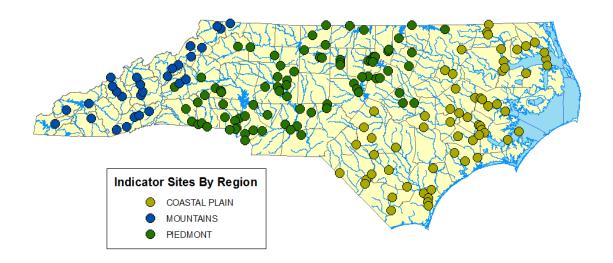

Indicator Sites By Region
- COASTAL PLAIN
- MOUNTAINS
- PIEDMONT

Table 1. Number of Monitoring Stations and Results Used to Prepare Indicator Graphs

Region	Number of Stations	Number of Results[1]		
		Turbidity	Fecal Coliform Bacteria	Summer Dissolved Oxygen[2]
Coastal Plain	63	16,556	19,289	8,290
Mountains	28	8,395	9,531	3,429
Piedmont	80	21,346	25,339	10,426
Total	**171**	**46,297**	**54,159**	**22,145**

1. Period: January 1970 through December 2010.

2. Summer is defined as June, July, August, and September. Only surface results (< 1m) were used.

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[1] Note that the bars graphs for the decade "2010s" on pages 2-6 represent one year (2010)

Dissolved Oxygen Proportion (%) < 4.0 mg/L

Surface results measured during Jun, July, Aug, Sept.

Mountains

Piedmont

Coastal Plain

Decade

Year since 1990

Turbidity -- Proportion (%) > 50 NTU

Mountains

Piedmont

Coastal Plain

Decade

Year since 1990

Turbidity (NTU) -- Median (50 th percentile)

Mountains

Piedmont

Coastal Plain

Decade

Year since 1990

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Fecal Coliform Bacteria — Proportion (%) > 200 (colonies/100mL)

Mountains

Piedmont

Coastal Plain

Decade

Year since 1990

Fecal Coliform Bacteria Geometric Mean (colonies/100mL)

Mountains

Piedmont

Coastal Plain

Decade

Year since 1990