

NEW JERSEY AMBIENT LAKE MONITORING NETWORK

Victor Poretti, Johannus Franken
NJ Dept. of Environmental Protection
Water Monitoring and Standards
Bureau of Freshwater and Biological Monitoring
35 Arctic Parkway, PO Box 427
Trenton, NJ 08625

ABSTRACT

In 2003, Water Monitoring and Standards (WM&S), Bureau of Freshwater and Biological Monitoring, (BFBM) formed an Ambient Lake Water Quality Monitoring Workgroup, consisting of Department data users and the USEPA, to develop a lakes monitoring network. The target population was identified as all lakes, man-made or natural, excepting water supply reservoirs, wholly or partially within New Jersey's political boundaries. A lake was defined as a permanent body of water, at least two hectares in size, and an approximately one meter depth. Lakes were selected randomly using EPA's Generalized Random Tessellation Stratified (GRTS) survey design in a manner that equalized selections over all State Omernik Level III Ecoregions. The final network consists of 200 lakes, divided into 5 Panels of 40 lakes; each Panel sampled once every five years, 3 times per year, during the Spring through Fall. The number of in-lake sample stations varies from 1 – 3 per lake with the outlet of each lake sampled as well.

In 2005, the program was initiated with the sampling of Panel 1 lakes. Of the lakes sampled, nineteen lakes exceeded the New Jersey Water Quality Criteria for total phosphorus of > 0.05 mg/L. Six lakes had a Carlson Trophic Index rating of Oligotrophic for at least one station, and only during the fall season. All other lakes had a Carlson Trophic Index rating in the Eutrophic range.

Data and assessments from this initial Panel serve as a preliminary estimate of the statewide status of New Jersey Lakes. Lakes entirely oligotrophic were not represented. All lakes had periods in a eutrophic state. This demonstrates that Panel 1 lakes are in, or accelerating toward, a eutrophic state.

New Jersey has also participated in EPA's Survey of the Nation's Lakes which may yield information that can enhance New Jersey's Lake Network.

KEYWORDS

Ambient Lake Water Quality Monitoring, probabilistic design, Generalized Random Tessellation Stratified (GRTS), Omernik Level III Ecoregions, New Jersey Water Quality Criteria, total phosphorus, Carlson Trophic Index, Oligotrophic, Eutrophic, New Jersey Lakes, Survey of the Nation's Lakes.