



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

8/19/06

Dr. Richard Eskin, Ph.D., Director
Technical and Regulatory Services Administration
Maryland Department of the Environment
1800 Washington Boulevard, Suite 450
Baltimore, MD 21230

Dear Dr. Eskin:

The U.S. Environmental Protection Agency (EPA) Region III has reviewed the report, "Water Quality Analysis of Eutrophication for Little Seneca Lake, Montgomery County, Maryland," which was submitted by the Maryland Department of the Environment (MDE) for final Agency review on July 13, 2006.

EPA agrees with MDE's determination that the recent data show that a nutrient Total Maximum Daily Load (TMDL) is not necessary for Little Seneca Lake. Little Seneca Lake in the Seneca Creek watershed (basin code 02-14-02-08) was first listed by Maryland on its 1998 Section 303(d) list of water quality-limited segments as impaired by nutrients.

Although Maryland's water quality standards do not impose a limit on the concentration of nutrients in the water column, its general water quality criteria prohibit water pollutants in amounts that create nuisance or interfere with designated uses. Therefore, elevated chlorophyll *a* and low dissolved oxygen (DO) are used as indirect indicators of nutrient impairment. For this WQA, MDE used routine monitoring data collected during 2001, which indicated that while chlorophyll *a*, biochemical oxygen demand, clarity, phosphorus, and nitrogen maintained concentrations below eutrophic thresholds, DO concentrations in the deeper portions of the lake ranged as low as 0.1 mg/L. Maryland's DO criterion is 5mg/L.

Lake thermal stratification during the summer months often causes concomitant temperature and DO concentration decreases as lake depth increases. In Little Seneca Lake, an abrupt transition occurs between a depth of 3m and 9m. Within this zone, temperature and DO concentrations fall from 29.3° to 12.5° and 8.3 to 0.7 mg/L respectively. The temperature profile indicates strong thermal stratification and is often associated with natural hypolimnetic DO depletion. To verify that Little Seneca Lake's DO levels were naturally occurring, Maryland examined three impoundments with similar temperature and DO profiles. Both existing and simulated scenarios for two of the three reference impoundments determined that even under "all forest" surrounding watershed conditions, the DO profiles for all three reference impoundments support the conclusion that the hypoxia observed in Little Seneca Lake is due to the natural condition or stratification.



Therefore, a TMDL for nutrients is not necessary to achieve water quality standards in this lake. If future evidence suggests that Little Seneca Lake is experiencing impairments from eutrophication-related water quality pollutants, then MDE will need to readdress the nutrient impairment.

If you have any questions or comments regarding this report, please contact Mr. Thomas Henry, TMDL Program Manager, at (215) 814-5752.

Sincerely,

Signed

Jon M. Capacasa, Director
Water Protection Division

cc: Melissa Chatham, MDE-TARSA
Nauth Panday, MDE-TARSA

10/12/06

Erratum: Page 1, paragraph 4, last sentence, the “or” between “condition” and “stratification” should be “of.”

