Phosphorus and phytoplankton in Lake Michigan: Model post-audit and projections

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The eutrophication model, LM3-Eutro, was developed in support of the Lake Michigan Mass Balance Project to simulate chlorophyll-a (phytoplankton), phosphorus and carbon concentrations in the lake. This high-resolution carbon-based model was developed and calibrated using extensive field data collected for the project in 1994-1995. LM3-Eutro has been applied to make long-term phosphorus and phytoplankton projections to evaluate the future trophic status of the lake. However, these projections were based on our best estimates of phosphorus loadings at the time, since very little has been measured over the past two decades. Recent work has been done to update phosphorus loadings for the Great Lakes, including for Lake Michigan. Preliminary results suggest that the loading to the lake remained relatively constant over the past decade. Here we will evaluate model performance by comparing and discussing our loading assumptions and model projections with the latest estimated loadings

and in-lake phosphorus and phytoplankton concentrations. The results will also be shown in context with the target loads and lake concentrations that were established for Lake Michigan in the 1970s as part of the bi-national Great Lakes Water Quality Agreement. This abstract does not necessarily reflect EPA policy.