

Great Lakes Water Quality Agreement

Total Phosphorus Goals for Lake Erie

Ohio Lake Erie Phosphorus Task Force
Phase II
August 1, 2012

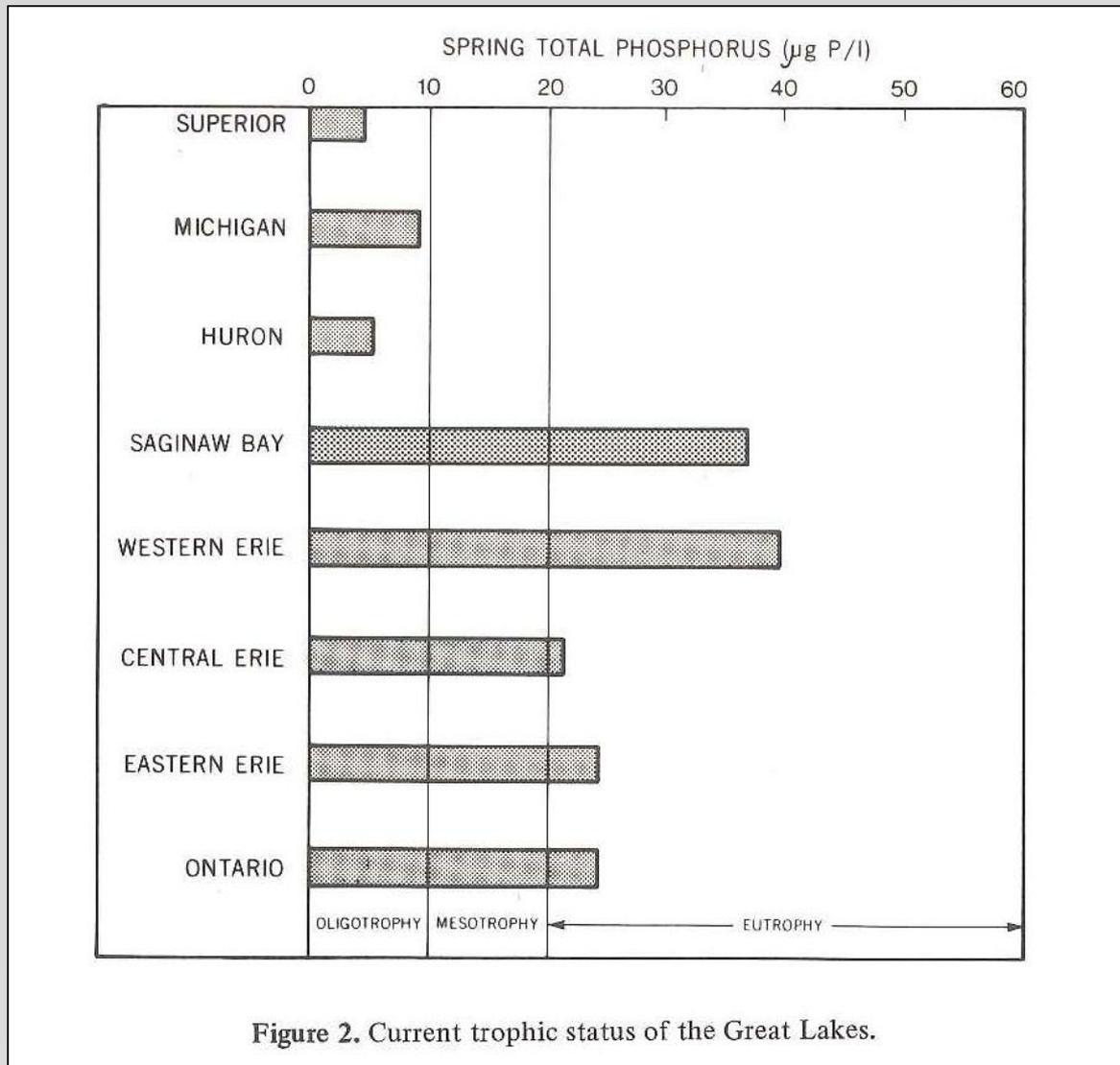


Approach to Setting Phosphorus Targets

- 1972 Great Lakes Water Quality Agreement
 - General ecosystem objectives
- Work Groups Charged by IJC
 - Develop nutrient objectives (lake concentrations) that would eliminate/reduce problems and protect all beneficial uses



Available Lake Total P Concentrations

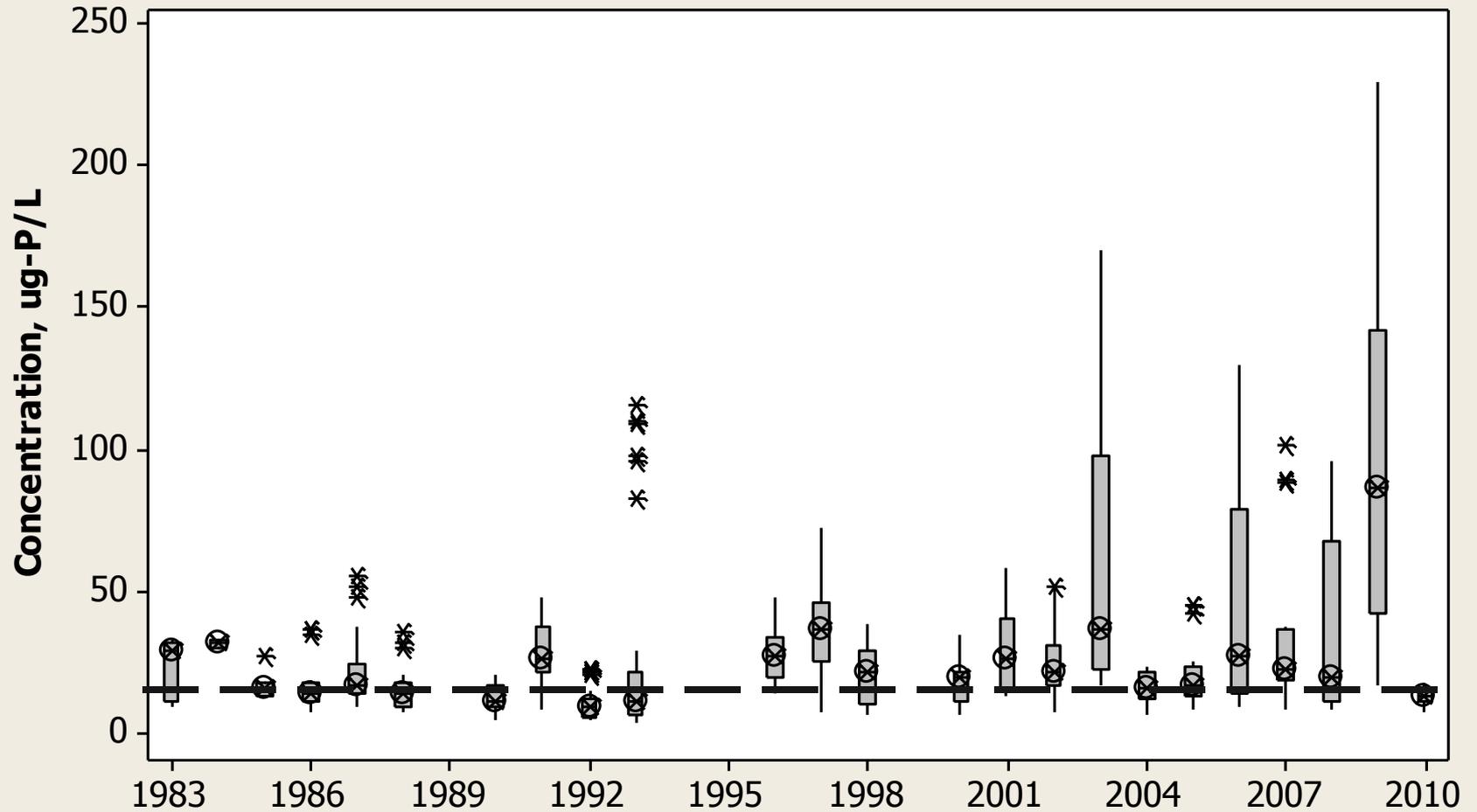


Proposed Objectives for Spring Total Phosphorus

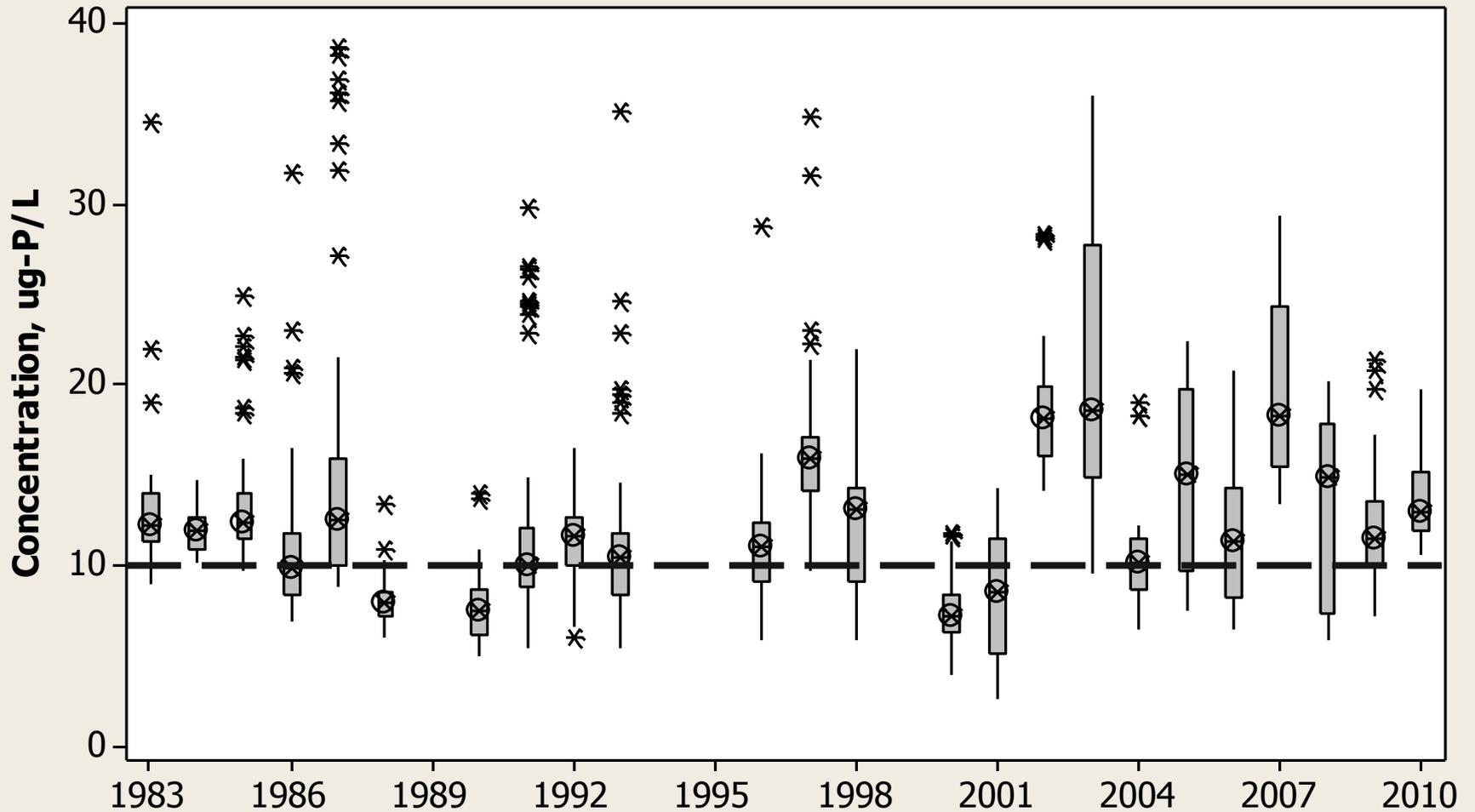
- Western Lake Erie Basin: 15 $\mu\text{g/L}$
 - “reduction in present levels of algal growth in Lake Erie”
- Central Lake Erie Basin: 10 $\mu\text{g/L}$
 - “restoration of year-round aerobic conditions in the bottom waters of the central basin of Lake Erie”
- Eastern Lake Erie Basin: 10 $\mu\text{g/L}$
 - “upper limit of oligotrophy”



Lake Erie Western Basin Total Phosphorus 1983-2010



Lake Erie Central Basin Total Phosphorus 1983-2010

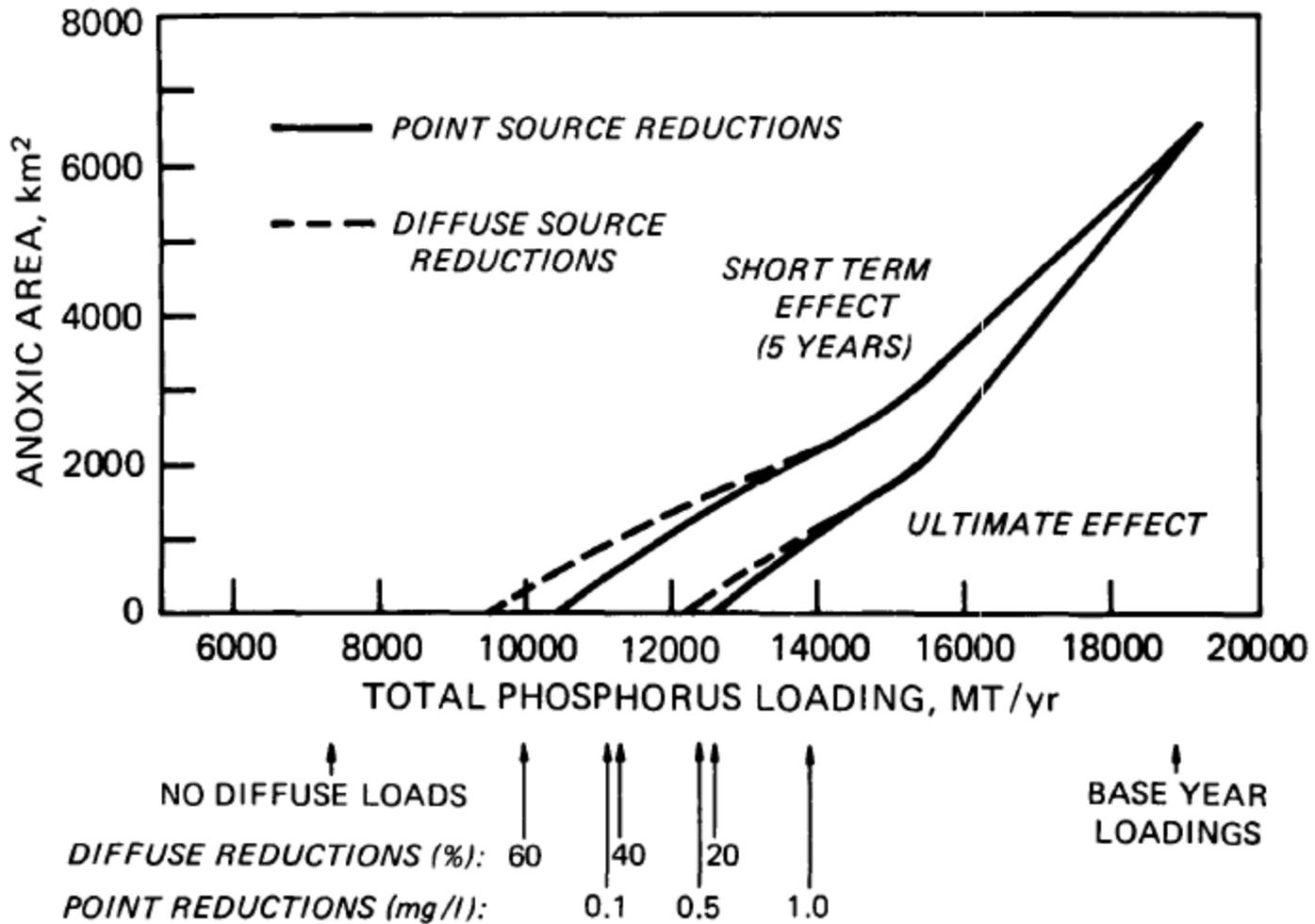


Five-year review of 1972 GLWQA

- Work Group Charge
 - Establish target loads required to meet desired water quality objectives
- 1976 chosen as base year for development of target loads
- Five different lake simulation models used



Lake Erie Model Predictions



Lake Erie Total Phosphorus Target Load

- 11,00 metric tons/year
 - Reaffirmed the 1972 GLWQA objective of year-round aerobic conditions in Central Lake Erie Basin
 - No mention of year-to-year-variability



Lake Erie Total Phosphorus Load by Major Source

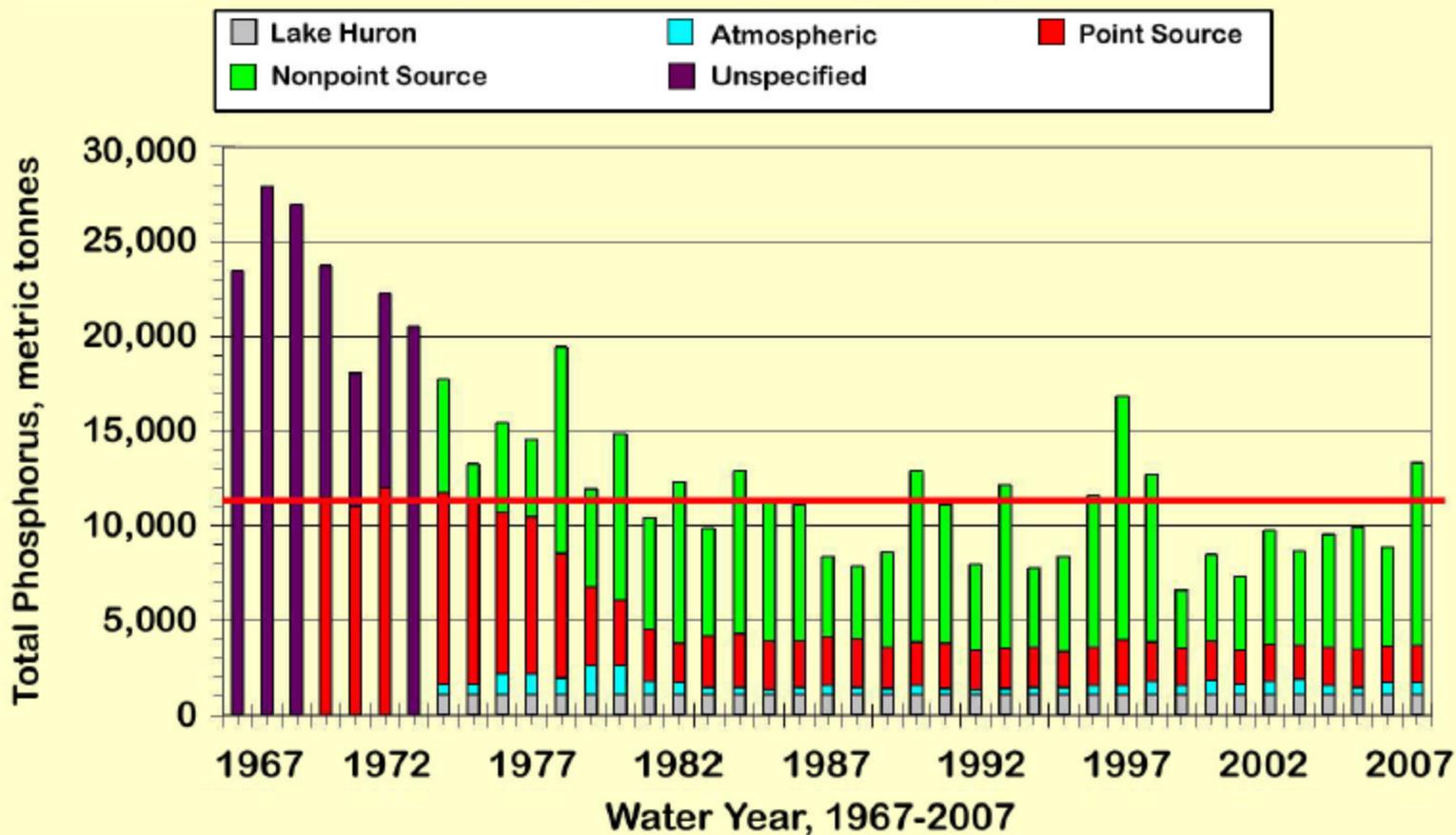
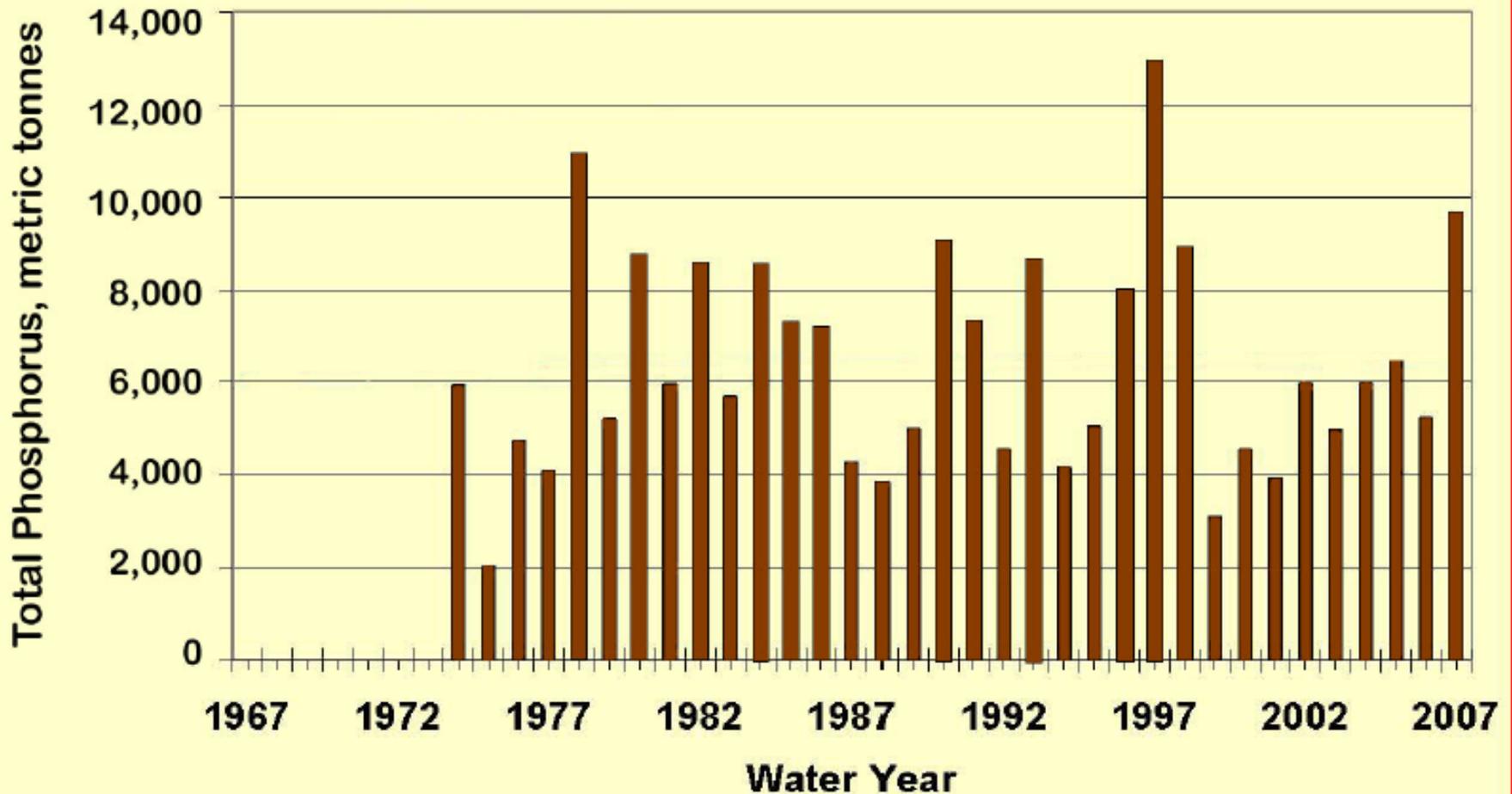


Figure 3— Annual loading of total phosphorus to Lake Erie, 1967 – 2007.

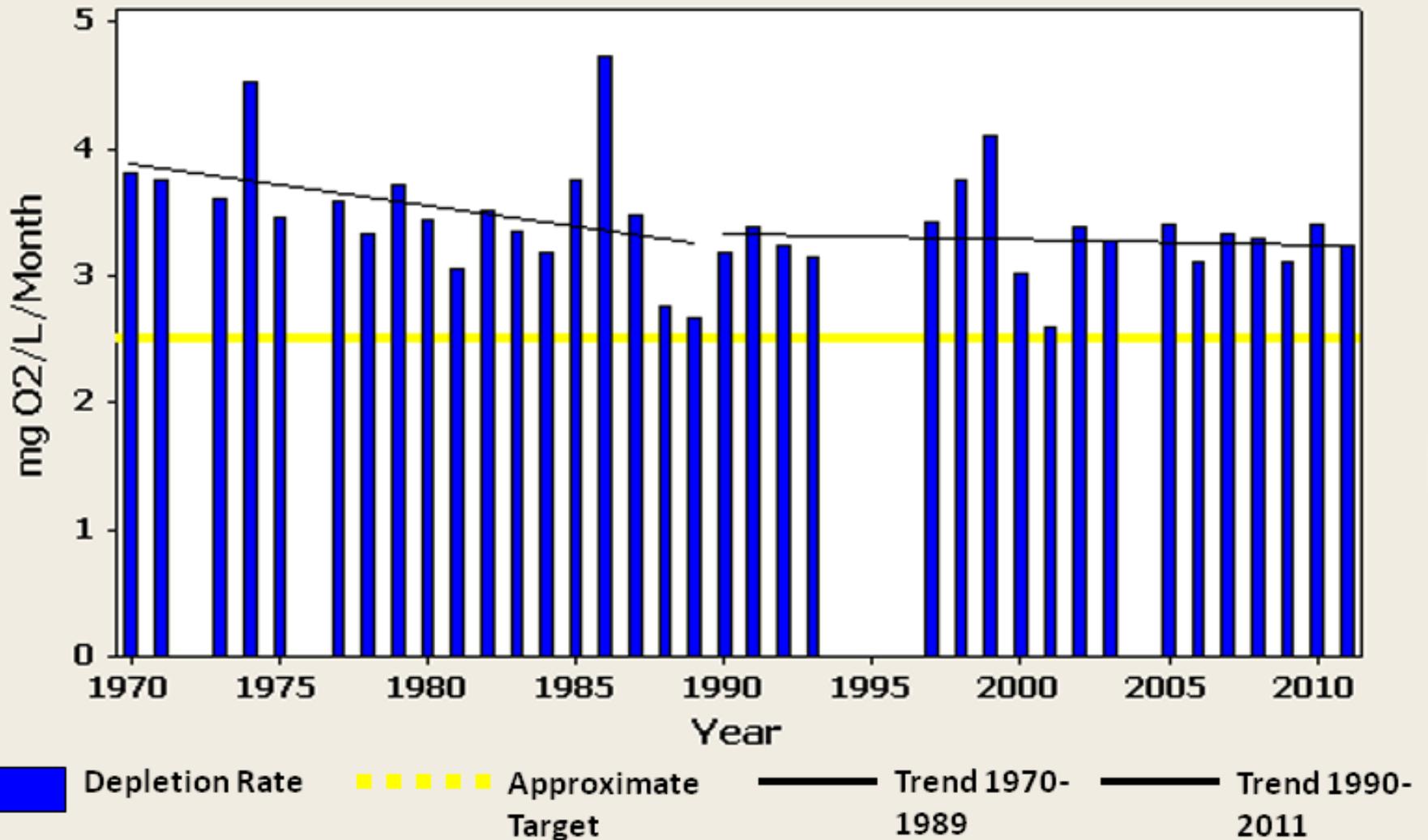
(Historical data from David Rockwell, U.S.EPA and David Dolan, University of Wisconsin Green Bay. Data from 2002-2007 are based on personal communication from David Dolan to David Baker, Heidelberg University. Graph prepared by David Baker)



Nonpoint Source Phosphorus Load to Lake Erie



Oxygen Depletion Rate in Lake Erie Central Basin



Questions?

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Lake Erie Western Basin Total Dissolved Phosphorus 1983-2010

