

## THE GREAT LAKES PROTECTION FUND

Formed by the Governors of the Great Lakes states, the Great Lakes Protection Fund (GLPF) is a non-profit corporation. It holds a permanent environmental endowment to support collaborative actions that will improve the health of the Great Lakes ecosystem. A Board of Directors comprised of two governor-appointed representatives from each of the Great Lakes states governs the GLPF operation. The GLPF has funded 217 grants and program-related investments representing more than \$53 million in regional projects to improve the health of the Great Lakes ecosystem.

This project was selected because the GLPF felt it would lead to tangible improvements to the health of the Great Lakes ecosystem, that it would promote the interdependence of healthy ecological and economic systems and that it would do so in an innovative and creative manner.



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## The Sandusky River Watershed

### Phosphorus Soil Testing Program - An In Depth Look

Informational Fact Sheet 001



### Phosphorus Fertilizer — IN your Grain, NOT down the Drain!



Algae (green color) in Sandusky Bay and Western Lake Erie off the mouths of the Sandusky and Maumee Rivers.

**A Program of the Heidelberg College National Center for Water Quality Research and the Sandusky River Watershed Coalition, supported by the Great Lakes Protection Fund.**

## Why a New Concern about Phosphorus Levels?

Since the late 1980's, northwestern Ohio farmers have been adopting programs to reduce phosphorus runoff into Lake Erie. These programs focused on particulate phosphorus, the portion that attached to soil particles. Through adoption of conservation tillage, along with increased use of filter strips, significant progress has been made in reducing suspended sediment and particulate phosphorus loading to Lake Erie. This progress has been documented by the river monitoring programs of the National Center for Water Quality Research (NCWQR) at Heidelberg College.

These same river monitoring programs have revealed that the successful erosion control practices have been accompanied by large increases in runoff of another form of phosphorus, namely dissolved reactive phosphorus (DRP). This form of phosphorus is particularly effective in supporting algal growths in lakes and rivers. With nuisance algae growths in Lake Erie on the increase, water quality is again being degraded for drinking, swimming and fishing. This results in greater costs to treat community water supplies, beach closings along the lake and altered fish populations—all of which affect the economics of our entire region.

To address these new concerns, Ohio's agricultural community is taking a fresh look at nutrient management under conservation tillage systems. Research has shown that with conservation tillage, phosphorus tends to accumulate in the upper portion of the soil profile where it is readily available for surface runoff to streams and lakes but may be less available to plant roots. As part of this program, we are initiating a 4-year phosphorus soil testing project in



the Sandusky River Watershed.

To guide this project the NCWQR and the Sandusky River Watershed Coalition have formed a Project Team comprised of repre-

sentatives of local Soil and Water Conservation Districts (SWCD), certified crop advisors, fertilizer dealers and university scientists from the Great Lakes area. The program is designed to better document soil test phosphorus levels under a range of farm field operations. From results of stratified soil testing, the Project Team expects to develop an index of stratification that will work to improve crop nutrient recommendations and reduce phosphorus losses during storm runoff.

By participating in the phosphorus soil testing program, you will be working with your crop advisor or fertilizer dealer to develop voluntary approaches to improved phosphorus management for both crop production and water quality. Help accomplish our goal: Phosphorus Fertilizer — IN your grain, NOT down the drain!



## WHAT IS INVOLVED?

This phosphorus (P) soil testing program is focused on farms within the Sandusky River Watershed. It provides stratified soil testing at the same time as standard soil testing is done and at NO added cost to participants. Stratified sampling does not replace standard soil testing, but provides additional information concerning P levels at the 0 to 2" and 2 to 8" depths. Results will show the extent of P accumulation within the soil surface, potential impacts on root nutrient uptake and increased vulnerability to phosphorus loss in surface runoff.

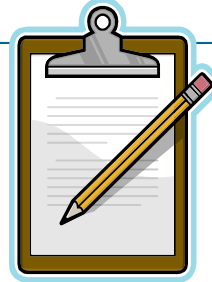
Any independent Certified Crop Advisor or local fertilizer dealer who has agreed to follow the program procedures developed by the Project Team can collect both stratified and standard samples.

The stratified soil samples will all be sent to a common laboratory to ensure consistency and to aid in analysis. The standard 8" sample will be processed as it always has been through the lab used by the consultant.



## HOW CAN I PARTICIPATE?

You may elect to participate in one of several ways. When you certify your crops at FSA, you can stop at the SWCD office and indicate your interest to participate through your fertilizer dealer or crop consultant. You may also contact your consultant or dealer directly to make this determination. In some cases, the consultant or dealer may ask if you wish to participate. If your crop advisor is not listed as a participant, have them contact the NCWQR. NOTE: In order to maintain farmer confidentiality, all test results sent to the NCWQR will be identified by a unique sample number only.



This study will sample different farm field locations annually with a goal of testing approximately 40,000 acres (1,500 soil samples) each year of the grant — a total of around 160,000 acres over the 4 year period. Some first year locations will be tested a second time in the last year of the grant. These results will be used to evaluate phosphorus reduction Best Management Practices to lessen the negative impacts of severe P stratification in the soil profile of some fields.

Best Management Practices to reduce phosphorus runoff are described in **BMP's for Reducing Dissolved Phosphorus Runoff—A Toolbox** (Informational Fact Sheet (002).

## I PLAN TO PARTICIPATE. WHAT NOW?

Your crop advisor will pull the stratified sample when he/she normally takes your standard sample. In addition, there is some information that may be requested if the representative you selected is not familiar with your operation. This information is to give the project team and your representative a better understanding of your operation and what influences the level of phosphorus in your soils. It may later determine what your representative recommends for phosphorus application. Information that may be requested includes:

- Soil type and drainage class
- Flood frequency
- Extent of sub-surface tile drainage and surface inlets
- Presence of sinkholes or limestone fractures
- Distance to nearest stream
- Presence of buffers
- Surface drainage
- Cropping history/rotations and form of tillage
- Fertilizer P rate— planned commercial application
- Fertilizer application method
- Manure application history
- Type of manure and application rate
- Manure P rate



## WHAT ELSE WILL THE PROGRAM CONSIDER?

Besides your help with stratified soil testing and information about the farm management practices, local SWCD offices will be involved by conducting spring and fall crop and tillage transect surveys across the counties. This will permit the Project Team to better weigh the impacts of land use changes on phosphorus loading measured in stream monitoring.

NCWQR will maintain monitoring stations on the Sandusky River as well as on Rock and Honey Creeks. NCWQR will also prepare annual reports summarizing results of stratified P soil testing and what those results mean for water quality and phosphorus management on farms.



Photo Courtesy of USDA NRCS