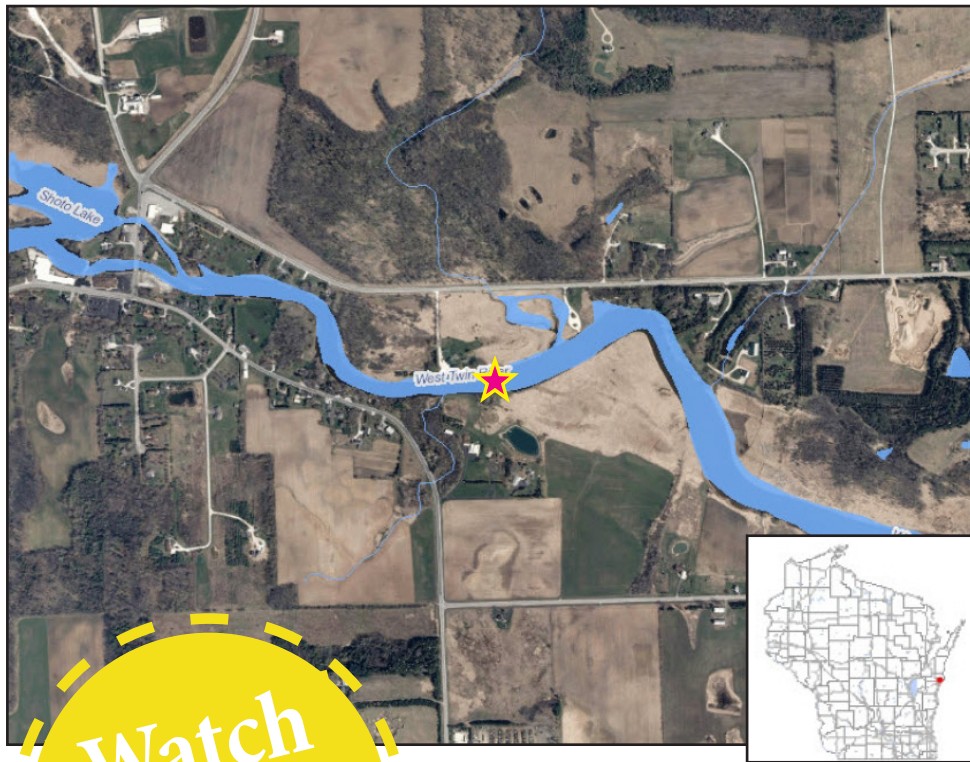


# Volunteer Total Phosphorus Monitoring

## West Twin River at Shoto Conservation Club

### 2013 Monitoring Results



#### Monitoring Site Information

SWIMS Station ID	10034797
County	Manitowoc
Watershed	West Twin River
Watershed Area	180.11 sq miles
Total Stream Miles in Watershed	360.91 miles
Downstream Waterbody	Lake Michigan
Volunteer	Mark and Sally Hunner

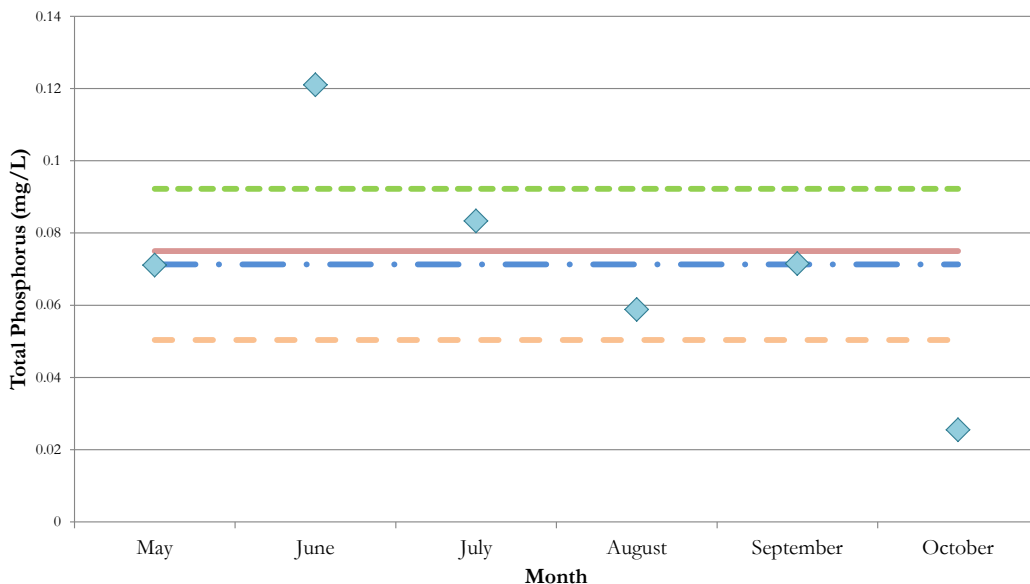
#### 2013 Monitoring Results

Min TP Value	0.0255 mg/L
Max TP Value	0.121 mg/L
Median TP Value	0.0713 mg/L
No. Samples > 0.075 mg/L	2



Prior to Wisconsin having a state standard for phosphorus in surface waters, water bodies were listed as impaired for phosphorus based on a biologist's best professional judgment. In 2012, WAV volunteers monitored 12 sites for phosphorus to help confirm certain streams were indeed impaired by that nutrient. Volunteers are continuing to monitor these stations in 2013 because the drought of 2012 was considered an "extreme weather event."

Total Phosphorus Concentration per Month



- ◆ Total Phosphorus Concentration
- Median Total Phosphorus Concentration
- High Range of Confidence Interval
- Low Range of Confidence Interval
- State Phosphorus Standard





Photo credits to David Seligman, Lindsey Albright, Ray Zuelke, Dave Zelinger, and Laura DeGolier

## Why Phosphorus?

Phosphorus is an essential nutrient responsible for plant growth, but it is also the most visible, widespread water pollutant in Wisconsin lakes. Small increases in phosphorus levels in a lake can bring about substantial increases in aquatic plant and algae growth, which in turn can reduce the recreational use and aquatic biodiversity of said lake. When the excess plants die and are decomposed, oxygen levels in the water drop dramatically which can lead to fish kills.

Additionally, one of the most common impairments in Wisconsin's streams is excess sediments that cover stream bottoms. Since phosphorus moves attached to sediments, it is intimately connected with this source of pollution in our streams. Phosphorus originates naturally from rocks, but its major sources in streams and lakes today are usually associated with human activities: soil erosion, human and animal wastes, septic systems, and runoff from farmland or lawns. Phosphorus-containing contaminants from urban streets and parking lots such as food waste, detergents, and paper products are also potential sources of phosphorus pollution from the surrounding landscape. The impact that phosphorus can have in streams is less apparent than in lakes due to the overall movement of water, but in areas with slow velocity, where sediment can settle and deposit along the bottom substrate, algae blooms can result.

## Volunteer Monitoring Protocol

To assess in stream phosphorus levels, WAV volunteers collected water samples that were analyzed for total phosphorus (TP) at the State Lab of Hygiene during the growing season (May through October). Following Wisconsin Department of Natural Resources (WDNR) methods, six phosphorus water samples should have been collected at each monitoring site - one per month for each of the six months during the growing season. The water samples were collected approximately 30 days apart and no samples were collected within 15 days of one another.

A stream site is considered "impaired" if: 1) the lower 90% confidence limit of the sample median exceeds the criterion (see the orange dashed line on the 'Total Phosphorus Concentration per Month' graph on the previous page) or 2) there is corroborating WDNR biological data to support an adverse response in the fish or macroinvertebrate communities. If there is insufficient data for either of these requirements, more data will need to be collected in subsequent years before an impairment decision can be made.

## PROJECT PARTNERS

