

State of Ohio's DRAFT

Domestic Action Plan



Lake Erie
Commission



In accordance with the Great Lakes Water Quality Agreement

Annex 4 Goals

(Ohio waters of Lake Erie)

- **Western Basin Goal**

- Reduce the amount of cyanobacteria biomass to mild levels 90% of the time.



- **Central Basin Goal**

- Maximum load (6,000 Metric Tons Annually) that would result in a dissolved oxygen concentration of at least 2 mg/L in the bottom waters during the summer stratified period.

Ohio Domestic Action Plan Goals

Targets to Address Harmful Algae Blooms

Priority Tributary	Spring (March 1-July 31) Values				
	2008 Baseline			Targets under 40% Reduction by 2025	
	Discharge (km ³)	Load metric tons	FWMC mg/L	Load Metric tons	FWMC mg/L
Maumee River	3.76	1,414 TP 302 DRP	0.38 TP 0.08 DRP	860 TP 186 DRP	0.23 TP 0.05 DRP
Portage River	NA	NA	NA	TBD	TBD
Sandusky River	0.963	367 TP 69.1 DRP	0.38 TP 0.07 DRP	230 TP 43 DRP	0.23 TP 0.05 DRP

Baseline data are not available for the Portage River in 2008 due to gaps in the data set. The development of a spring loading and concentration target for the Portage River will be completed once the methodology to develop the Maumee River HUC 8 sub-basin targets is completed.

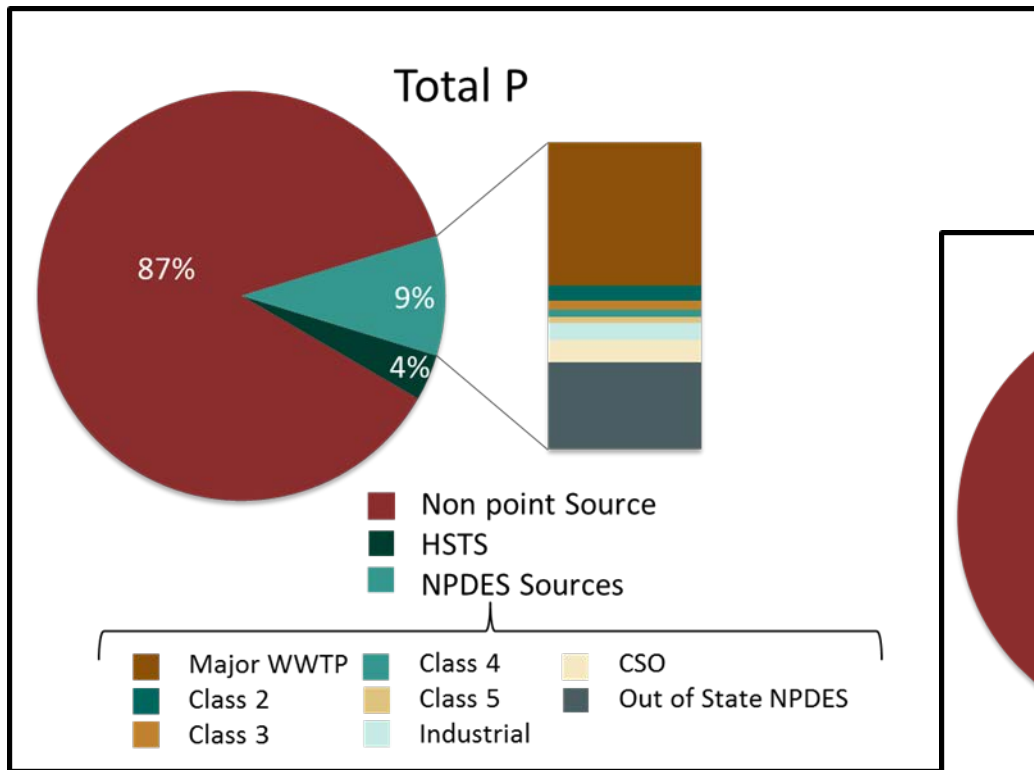
Ohio Domestic Action Plan Goals

Targets to Address Hypoxia (Metric Tons Annually, MTA)

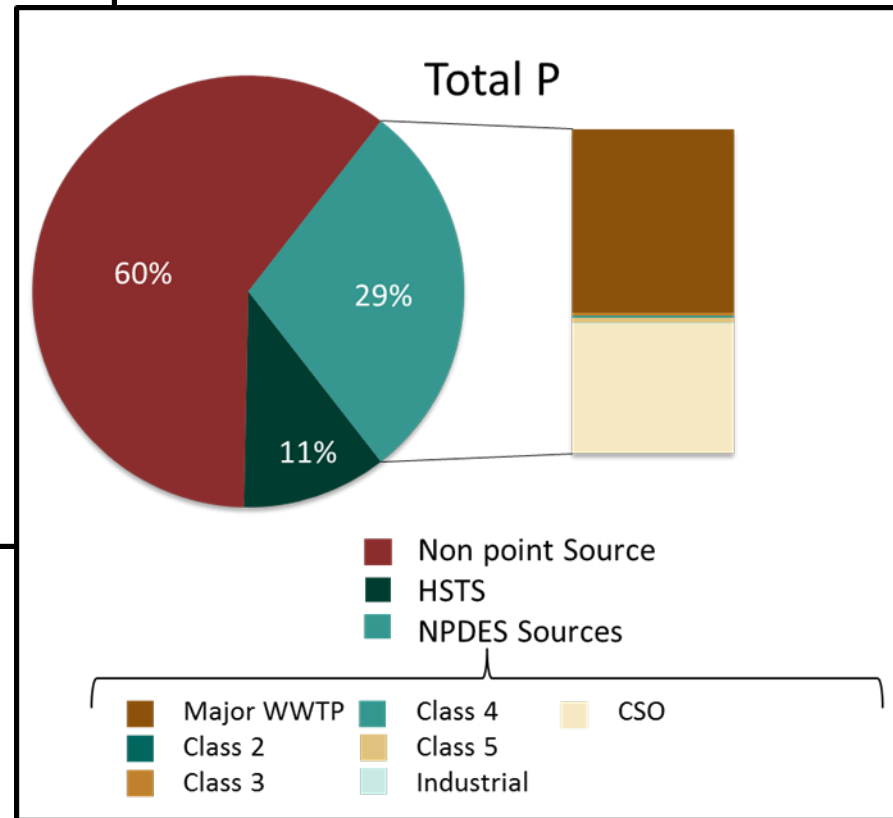
*Annual load estimates based on Maccoux, 2016 values.

Priority Tributary	2008 Annual Load*	40% Reduction Amount	Target Load by 2025
Maumee River	3,812	1,525	2,287
Portage River	359	144	215
Sandusky River	1,100	440	660
Cuyahoga River	452	181	271

The remaining three Annex 4 Priority Watersheds, the Toussaint, Vermilion, and Grand Rivers, are not included in this table because of their relatively small annual load totals (less than 150 MTA each). This represents less than 100 MTA of total reduction.



Total phosphorus source breakdown for Maumee River, water year 2013. From Nutrient Mass Balance Study 2016.



Total phosphorus source breakdown for Cuyahoga River, water year 2013. From Nutrient Mass Balance Study 2016.

Ohio DAP Actions

Grouped by type of action

- Agricultural Land Management
- Community Based Nutrient Reduction
- Restoration and Support of Ecosystem Services
- Monitoring, Tracking, and Support

Agricultural Land Management

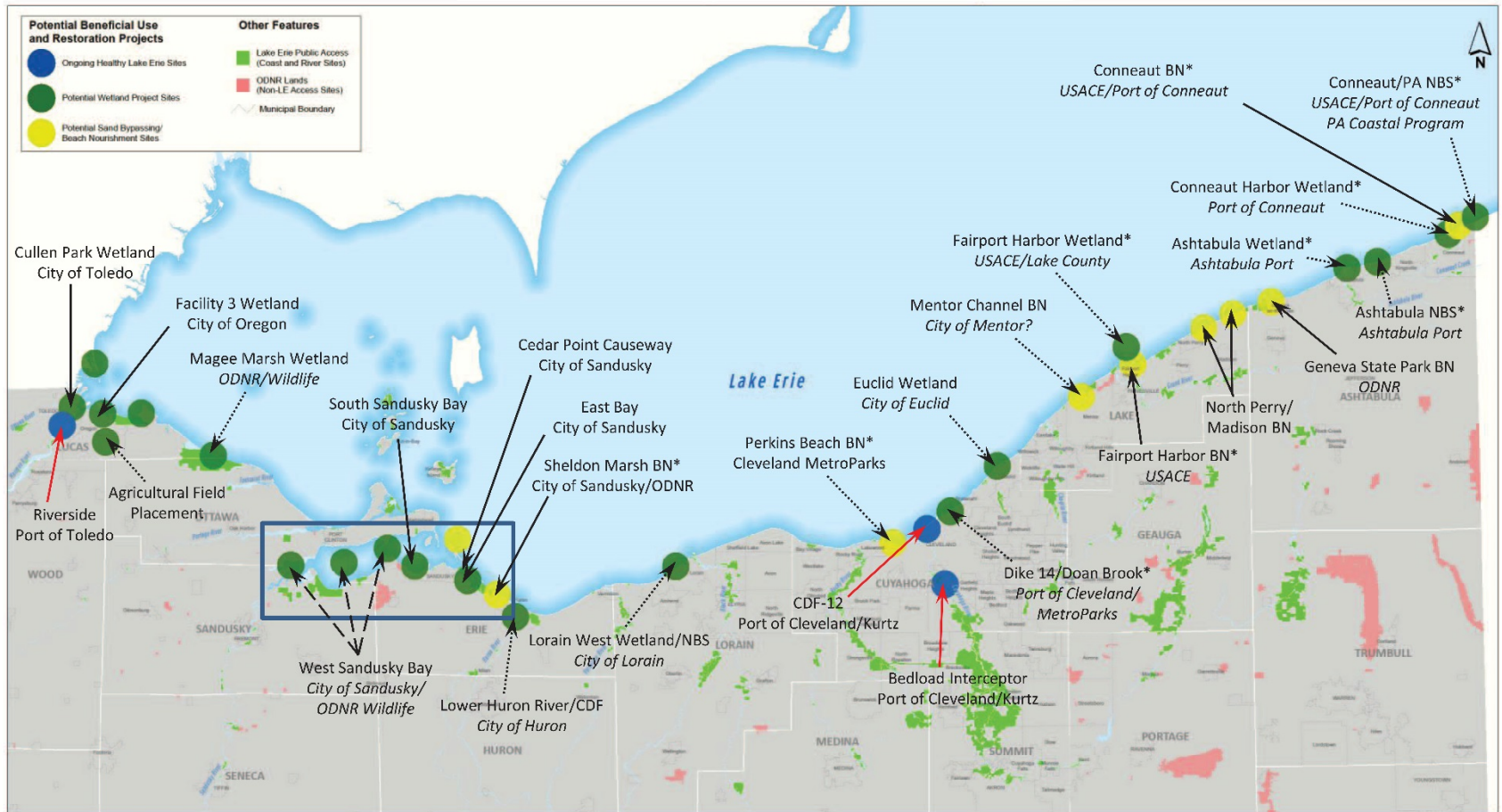
- Agricultural Best Management Practices
 - ODA will identify and promote (with NRCS, others) a suite of practices to reduce nutrient loss from farm operations.
 - Revitalize LE-CREP
 - Complete Ohio Clean Lake – Watershed Restoration
- Research Actions
 - Edge of Field, modified Tri-State recommendations, improved Phosphorus Index, drainage control
- Education and Outreach Actions
 - Fertilizer certifications, Ohio Applicator Forecast, Farm Stewardship Certification

Community–Based Nutrient Reduction

- Review and revise NPDES permits
 - Minor facilities in Annex 4 Priority Watersheds
 - Storm water program guidance
- Nutrient specific CSO study, review of Long Term Control Plans
- Continue infrastructure funding
- Develop Watershed Implementation Plans
- Evaluation of new technologies
- HSTS Operations and Maintenance

Restoration and Support of Ecosystem Services

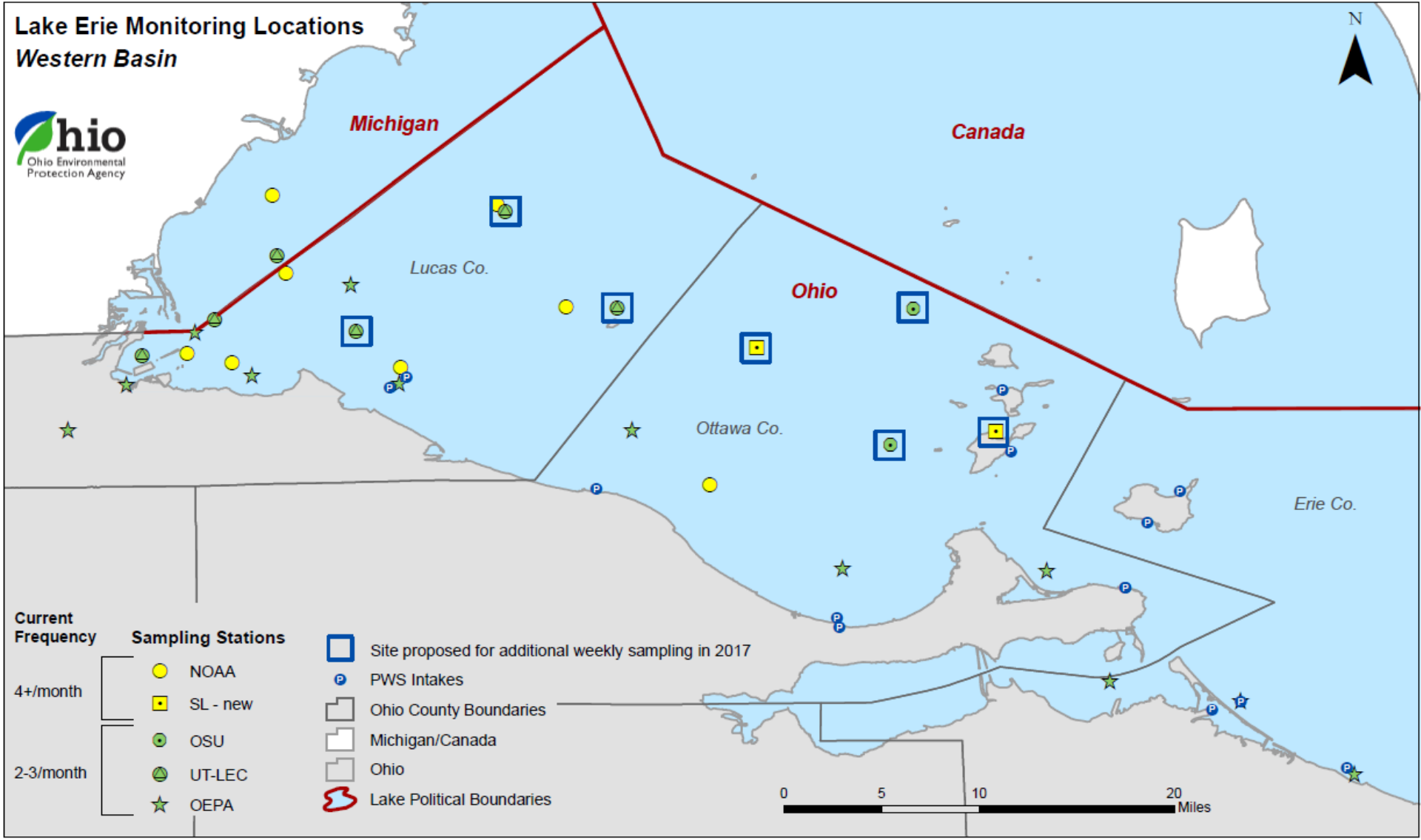
Potential Beneficial Use Restoration Projects



Lake Erie Monitoring Highlights

- Continue to sample water quality at fixed shoreline and nearshore stations
- Central Basin Hypoxia -field profiles nearshore to offshore
- Plan is posted at:
<http://epa.ohio.gov/dsw/lakeerie/index.aspx#125073721-nearshore-monitoring>

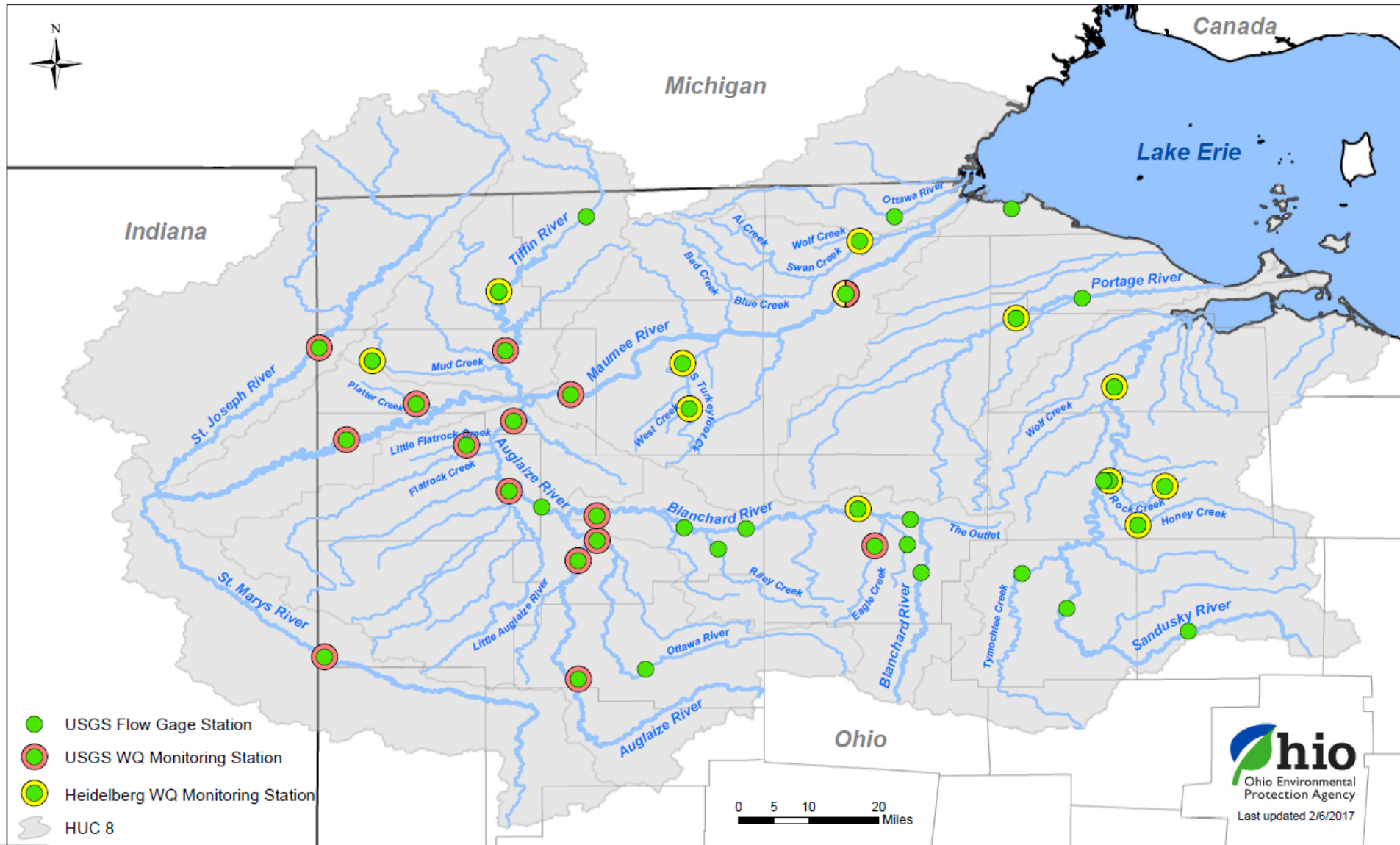
Lake Erie Monitoring Locations Western Basin



River	Monitoring Frequency	Gage Station Number
Maumee	gage, frequent nutrient monitoring	Maumee River near Waterville USGS Gage Station 04193490
Portage	gage, frequent nutrient monitoring	Portage River at Woodville USGS Gage Station 04195500
Toussaint	no gage or monitoring	--
Sandusky	gage, frequent nutrient monitoring	Sandusky River near Fremont USGS Gage Station 04198000
Huron	gage, frequent nutrient monitoring starting 2017	Huron River at Milan USGS Gage Station 04199000
Vermilion	gage, monthly nutrient monitoring, surrogates	Vermilion River near Vermilion USGS Gage Station 04199500
Cuyahoga	gage, frequent nutrient monitoring	Cuyahoga River at Independence USGS Gage Station 04208000
Grand River	gage, frequent nutrient monitoring starting 2017	Grand River near Painesville USGS Gage Station 04212100

Monitoring Priorities for Annex 4

Lake Erie Western Basin Drainage in Ohio: USGS Flow Gages and Nutrient Monitoring Stations 2017



Tracking & Reporting

- ErieStat
- Water Monitoring Summary
 - See lakeerie.ohio.gov
- U.S. EPA
 - Webinar
 - Other?



Why is water monitoring done, and by whom?

Federal, state, and educational institutions conduct water monitoring for a variety of reasons.

The U.S. Geological Survey (USGS), along with its federal, state, and local partners, investigates the occurrence, quantity, quality, distribution, and movement of surface and ground waters and shares data with the public and other agencies involved with managing our water resources.

Ohio EPA conducts water monitoring for Total Maximum Daily Load development and to assess trends in impairment.

ODNR is interested in protecting recreation, fish, and wildlife water uses.

Educational institutions such as Heidelberg University's National Center for Water Quality Research do water testing to answer research questions.

What do we measure?

A large number of components are measured. This summary focuses on total phosphorus, dissolved reactive phosphorus, and nitrogen in the form of nitrate (NO₃) + nitrite (NO₂).

The amount of water in the rivers is measured by USGS at their streamflow gaging stations.

Why this summary?

This summary provides a simplified overview of nutrient loads and concentrations that have been shown to be highly correlated with harmful algal blooms in Lake Erie.

Summarizing the results of these water monitoring efforts provides critical information to agencies and the public.

This summary is a tool for tracking annual changes and comparisons to water quality goals established by Annex 4 of the Great Lakes Water Quality Agreement and the Western Basin of Lake Erie Collaborative Agreement.

Where is the water monitored?

Ohio EPA, ODNR, USGS, and Heidelberg University have established many sampling stations in the Lake Erie watershed. Some of these stations are in the same locations to take advantage of USGS streamflow gage locations.

The stations in Figure 1 were chosen from a larger set to indicate the nutrient contributions upstream of the lake influenced sections of the rivers. Due to its large size, several tributaries to the Maumee River were also included.

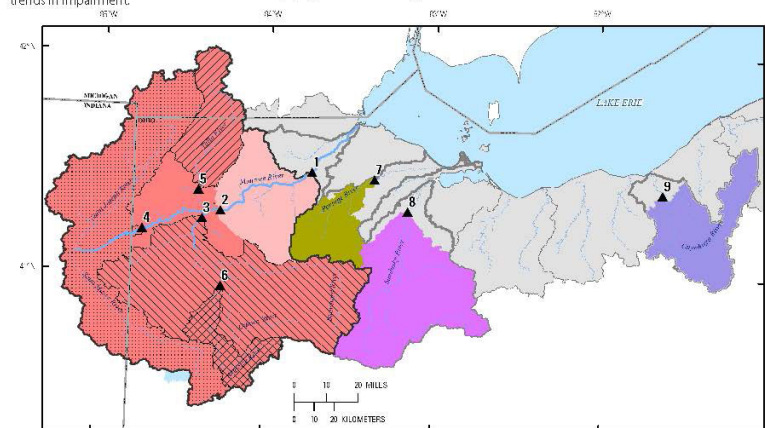


Figure 1: Sampling stations discussed in this report.

Station 1: Gage 04193500 - Maumee River at Waterville

Station 2: Gage 04192500 - Maumee River near Defiance

Station 3: Gage 04191500a - Auglaize River near Defiance d/s Dam

Station 4: Gage 04183500 - Maumee River at Antwerp

Station 5: Gage 04185318 - Tiffin River near Evansport

Station 6: Gage 04186500 - Auglaize River near Fort Jennings

Station 7: Gage 04195500 - Portage River at Woodville

Station 8: Gage 04198000 - Sandusky River near Fremont

Station 9: Gage 04208000 - Cuyahoga River at Independence

Ohio's Domestic Action Plan 1.0

lakeerie.ohio.gov

Thank You