



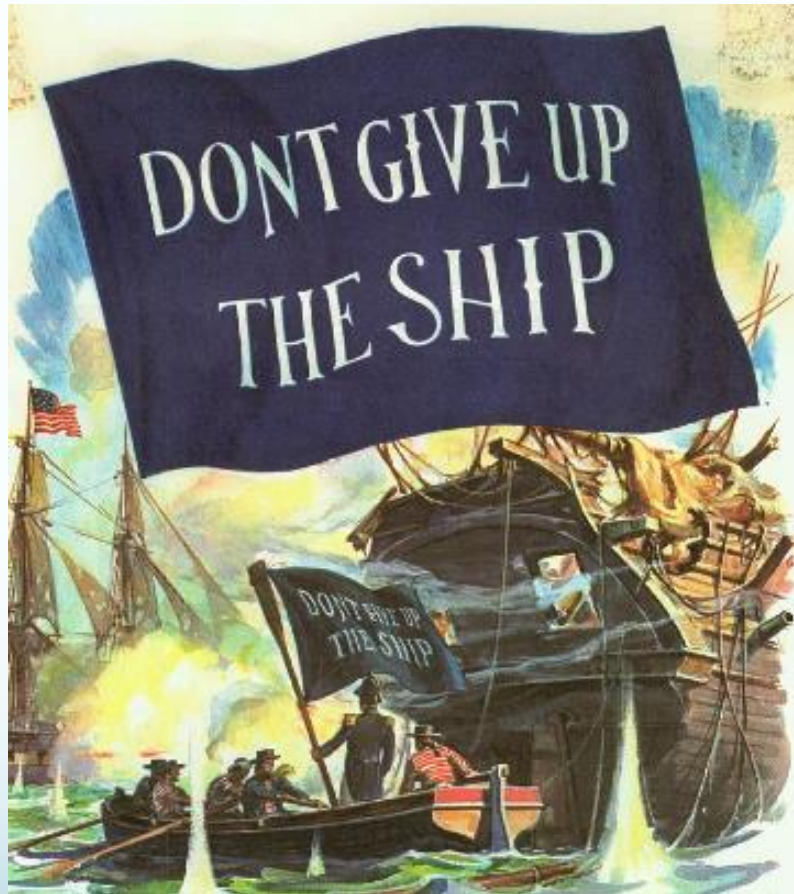
Presents

*3rd*

*“The ^Battle for Lake Erie”*

# First Battle for Lake Erie

## September 10, 1813



# Second Battle for Lake Erie

**1950s-60s: Citizen outrage builds as sewage and industrial waste create massive “dead zones”**

Rectangular Snip



**1969: Cuyahoga River catches fire again**



**1970-72: Landmark Legislation**





# Third Battle for Lake Erie



Photo: ECCSCM

**DANGER**

**AVOID ALL CONTACT  
WITH THE WATER**

**ALGAL TOXINS AT UNSAFE LEVELS  
HAVE BEEN DETECTED**

FOR MORE INFORMATION GO TO:  
[WWW.OHIOALGAEINFO.COM](http://WWW.OHIOALGAEINFO.COM)  
OR CALL 1-866-644-6224



A catfish struggles for a breath in the algae-filled waters in Point Place in Toledo.

THE BLADE/ANDY MORRISON

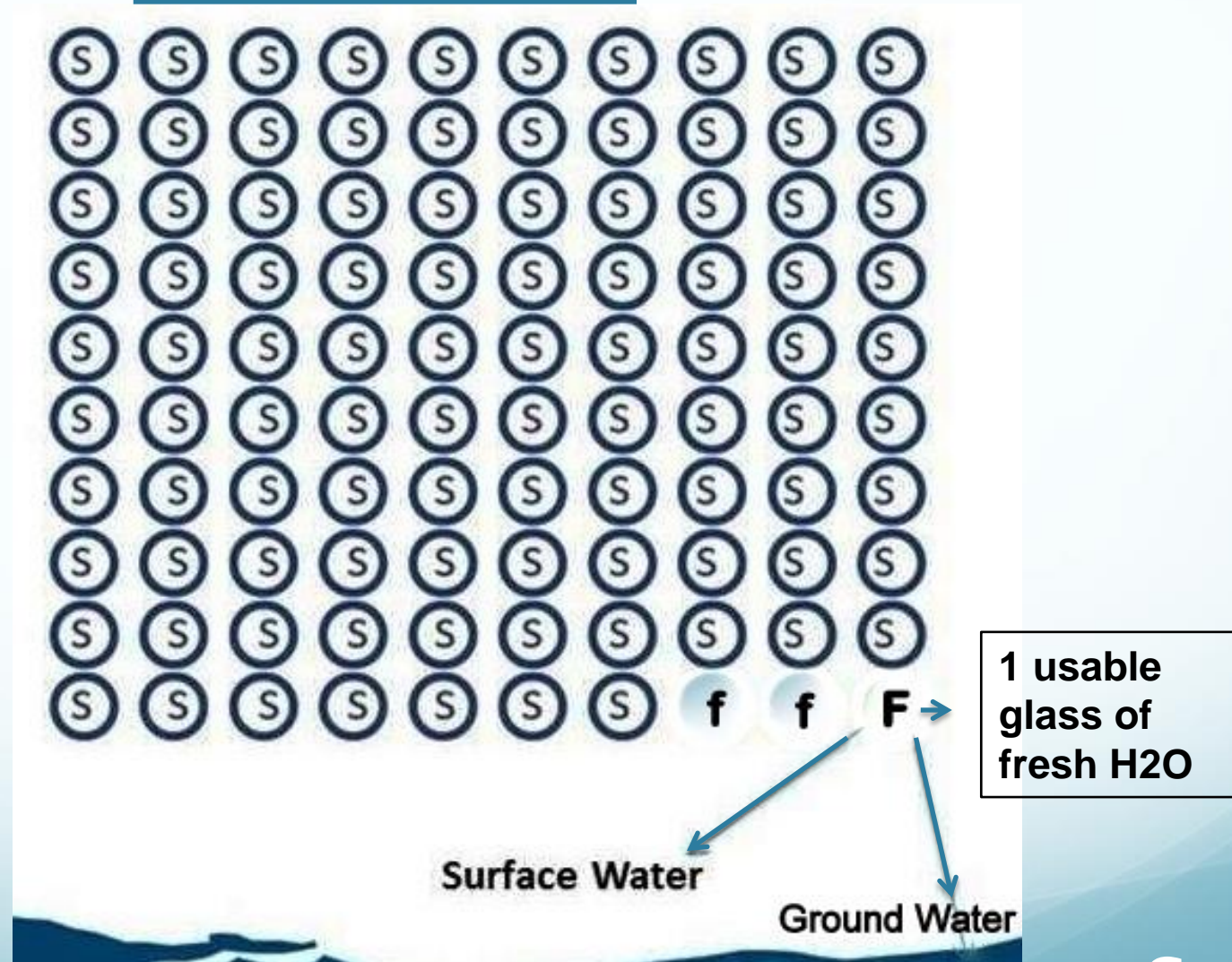
# Clean Water is a Right





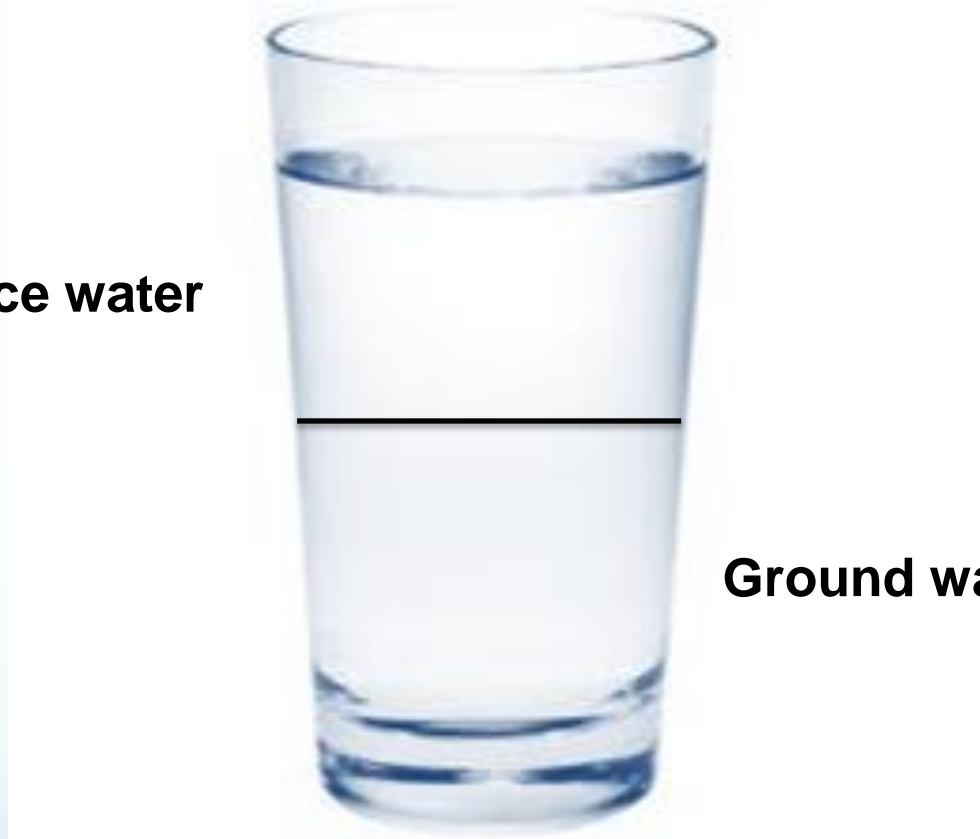
# All Earth's Water in 100 Glasses

## 97 are saltwater



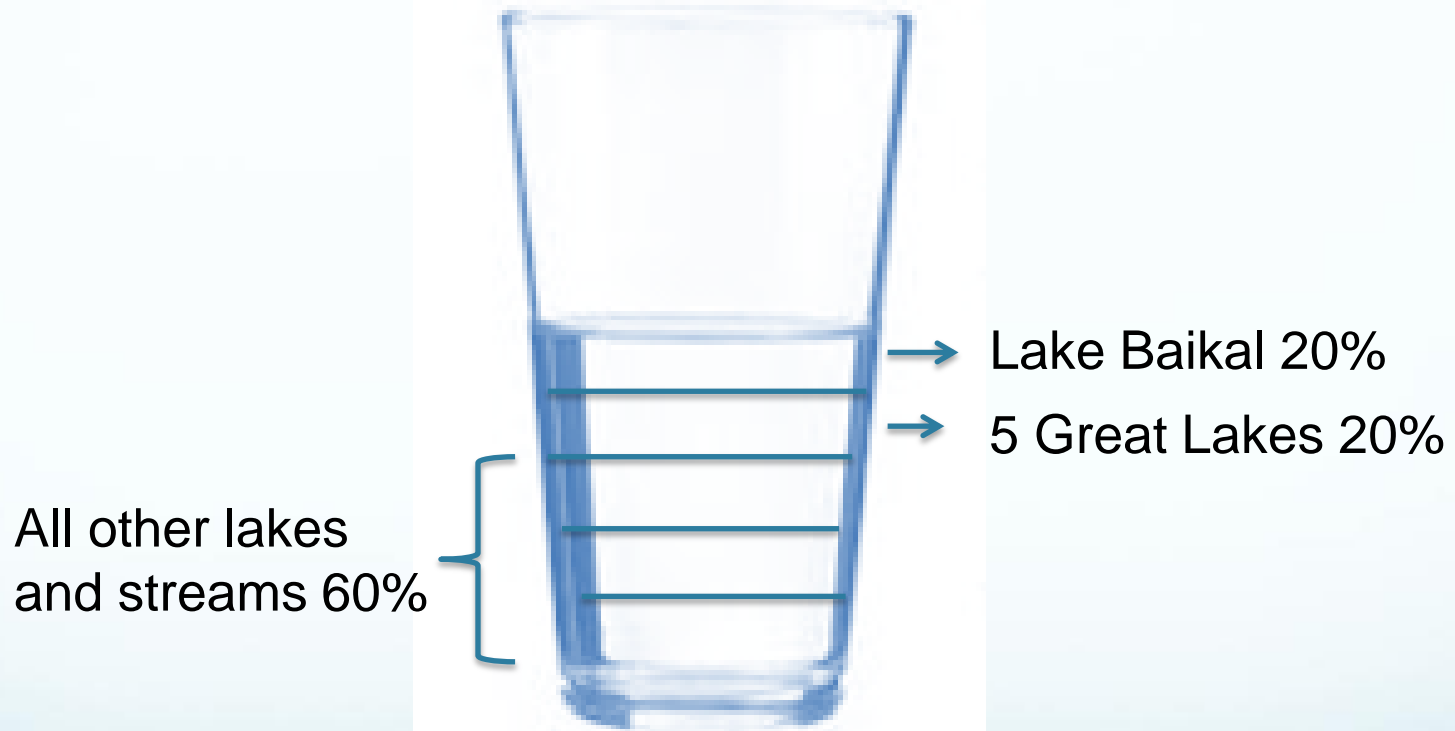
# All Earth's usable fresh water

**Surface water**



**Ground water**

# All Earth's usable, fresh, surface water



and Lake Erie's share  
of usable fresh surface water...



# 19 Precious Drops



# ...and here's what we're doing with them!



Photo: Haraz N Ghanbari/AP

# Lake Erie's 19 Precious Drops

- Home to more than 1,500 species of plants and animals
- Prime migratory bird route
- Drinking water for over 13 million people
- Economic resource for multiple states and Ontario

Source: Ohio Environmental Council



# Four Years After Toledo's Water Crisis some are still looking for solutions!





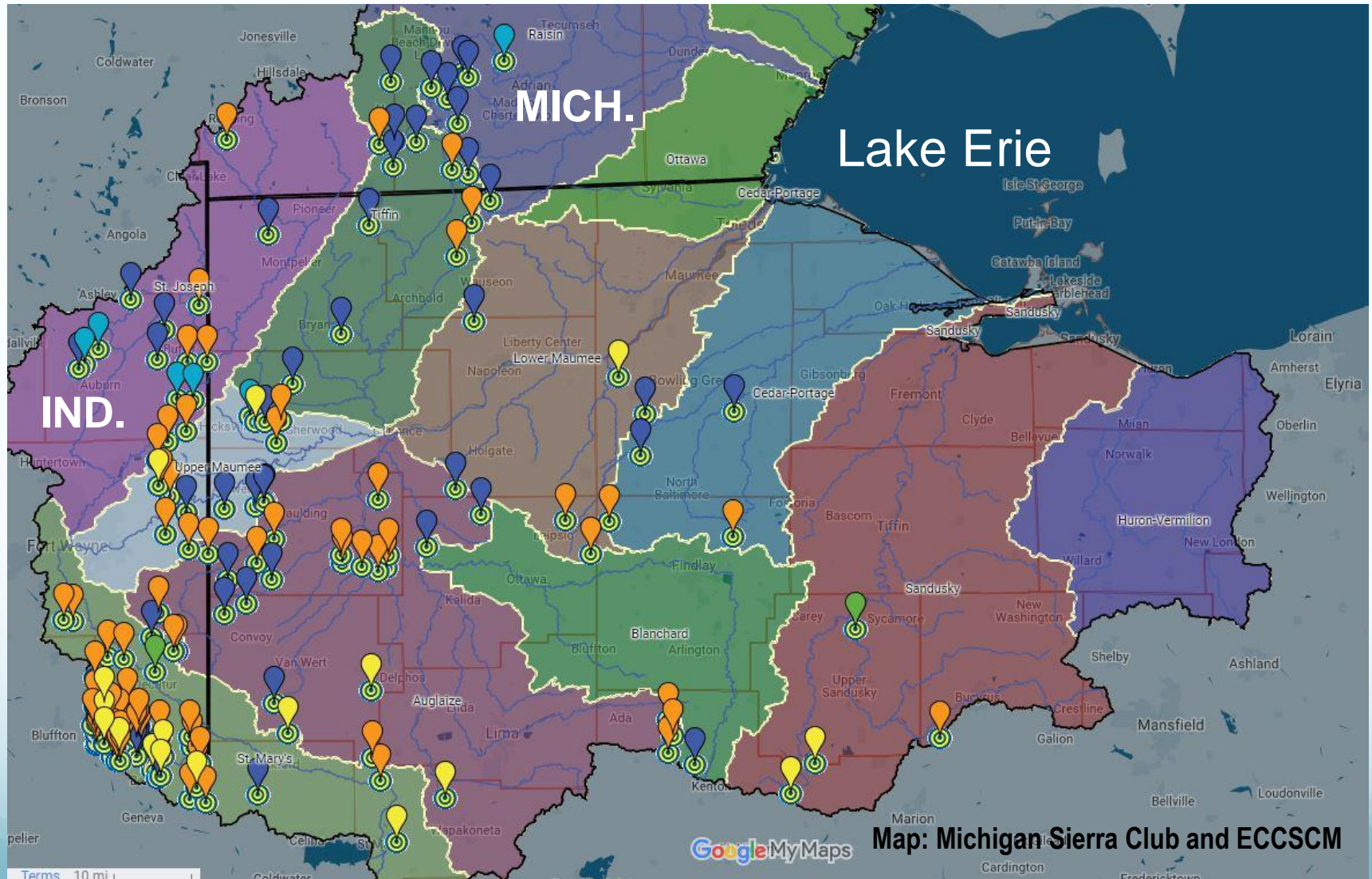
# Western Lake Erie Watershed: Over 150 Confined Animal Feeding Operations (CAFOs)

**More waste than Los Angeles and Chicago combined**





# Over 150 *Registered* CAFOs in W. Lake Erie Watershed



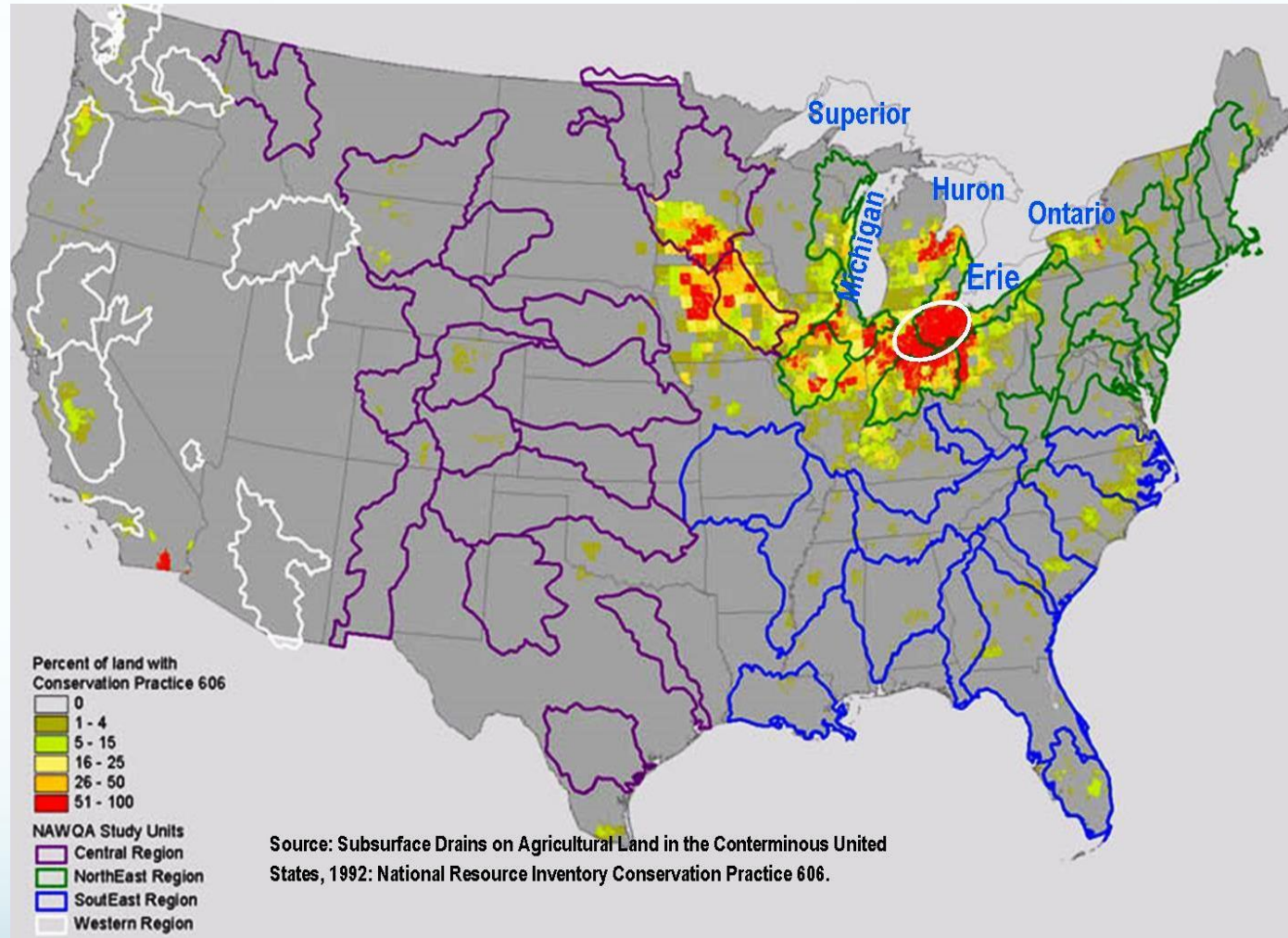
Search: *"Follow the manure"* for interactive map



# Subsurface Drainage

Of all the Great Lakes Erie is:

- Shallowest
- Most southerly
- Warmest
- Highest concentration of drain tiles
- Perfect Storm for H.A.B.s (harmful algal blooms)
- Nation's 2<sup>nd</sup> largest, free public toilet for CAFOs



# The Lake Belongs to Everyone

- **No Person or Corporation has the right** to impair our water
- **CAFO (Confined Animal Feeding Operation) owners shift their costs onto the public:**
  - **Toledo Water Customers pay \$6 million/year** more to treat drinking water since the 2014 water emergency. **\$50 million for ozonation**
  - **Existing Businesses Suffer:** lake tourism, charter fishing, restaurants, factories...any business that uses water.
  - **New Jobs Go Elsewhere**
  - **Quality of Life is Reduced** directly for everyone who uses Lake Erie to fish, boat, swim, or sightsee.

# Lake Erie is Not Healthy

- **Water Crisis of 2014** left 400,000+ citizens without drinking water for 2.5 days
- **Harmful “Algal” Blooms (actually cyanobacteria)** elevate toxins in drinking water
- **Record “Algal” Cover in 2015** – 300 square miles





# And **Green** is not good in this case

- **Overabundance of nutrients**, primarily **Soluble/Reactive Phosphorus**, feed the microcystis bacteria, creating microcystin toxins
- **Pollution/nutrients** come from “point sources” like factories, sewage treatment and food processing plants and CAFOs, plus “non-point sources” like corn and soybean fields, golf courses, lawns, faulty septic tanks
- **88% of excess nutrients in W. Lake Erie Basin from agriculture,\* about 50% of that via subsurface drainage.\*\***

\* OEPA: Nutrient Mass Balance Study for Ohio's Major Rivers

\*\* USDA and Royal Swedish Academy of Sciences: Phosphorus losses from monitored fields with conservation practices in the Lake Erie Basin

# CAFOs Put Our Health At Risk

- **Air and water contaminants:** Feces, urine, viruses, antibiotic-resistant E. coli and salmonella, methane, ammonia, hydrogen sulfide,
- **More CAFOs = More Manure = More Phosphorus = More Microcystis (bacteria) = Microcystin (toxin) + BMAA** beta-methyl-amino-L-alanine (?? linked to ALS and Parkinson's )
- **Microcystin Exposure** causes nausea, vomiting, diarrhea, fever
- **Microcystin LR is a Liver Toxin**
  - Haimen, China—30x greater liver cancer rate among fishermen who consumed microcystin-contaminated water, ducks and fish
  - Cararu, Brazil—101 dialysis patients developed liver failure after treatment with microcystin-contaminated water and 50 died
  - Documented deaths of wild and domestic animals after consuming water containing microcystin

# How Toxic is Microcystin?



Toxin	Dosage Required to Kill 50% of Lab Rats
Dioxin	0.000001 mg/kg/d
<b>Microcystin LR</b>	<b>0.000003 mg/kg/d (3 millionth mg)</b>
PCBs	0.00002 mg/kg/d
Methylmercury	0.0001 mg/kg/d
DDT	0.0005 mg/kg/d
Cyanide	0.02 mg/kg/d
Chlorine	0.1 mg/kg/d

Source: OSU Stone Laboratory



# Does Treatment to Rid Water of Microcystin Make Us Safer?

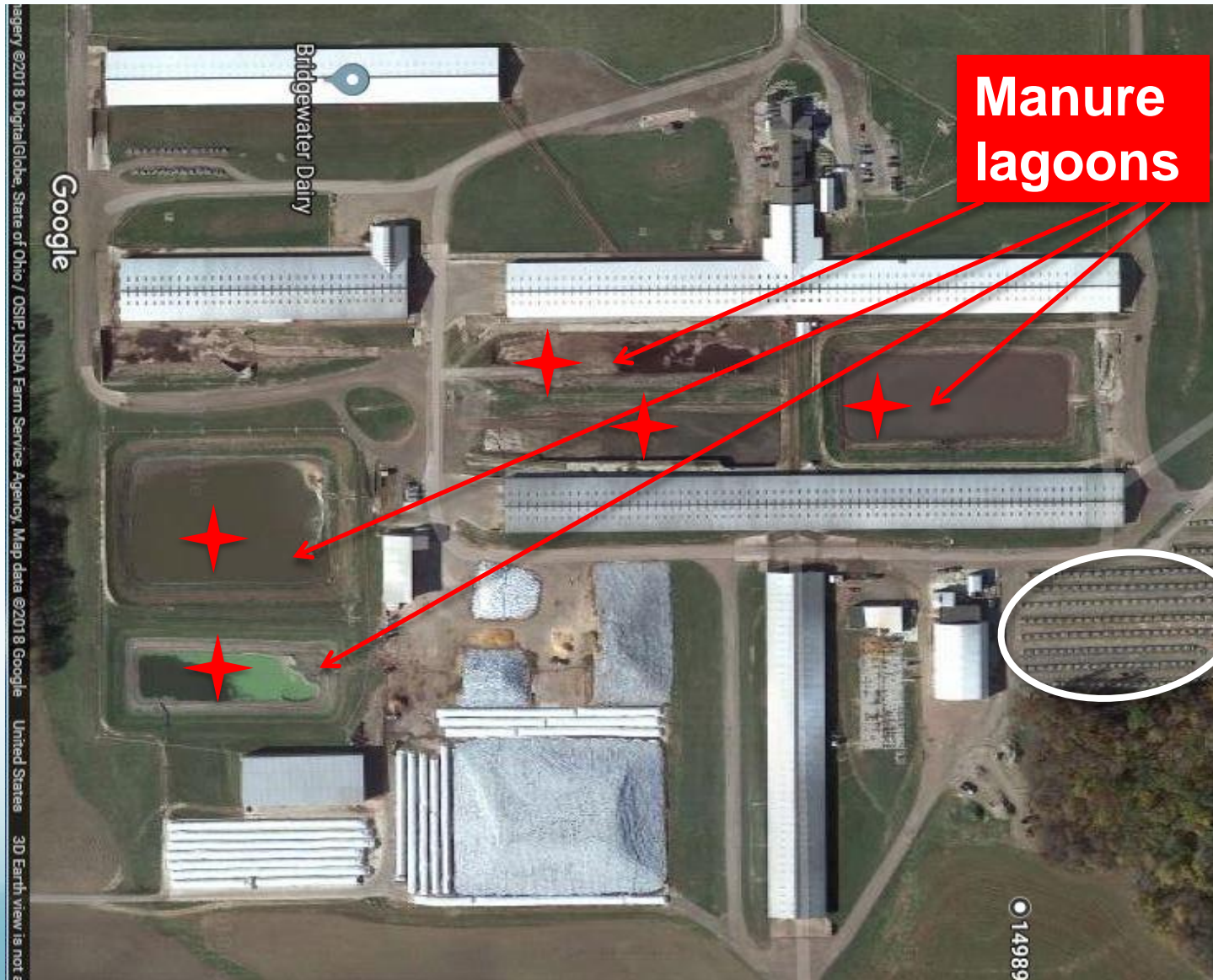
- Treating water with Chlorine to reduce Microcystin produces carcinogens like **Trihalomethanes**. Reducing THMs adds significantly to water treatment costs -- \$50M for ozonation at Toledo Water Treatment Plant



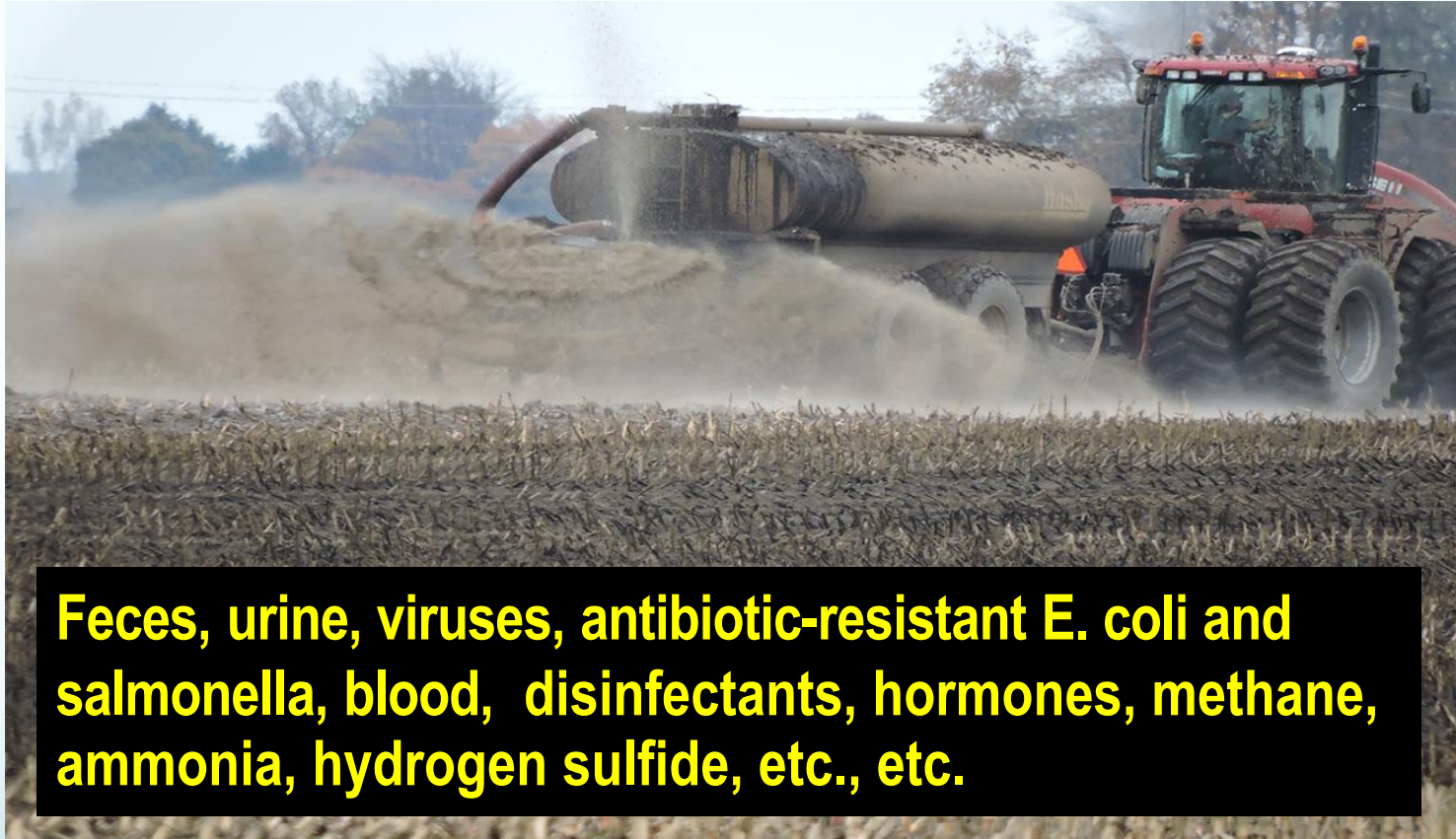
Source: Water Research Center

Now let's follow the manure...

**3,900 cows at Bridgewater Dairy in Williams County, generate more animal waste every year than Perrysburg, Sylvania, Maumee, Defiance and Fremont, combined.**



# ...repeated field applications.



**Feces, urine, viruses, antibiotic-resistant E. coli and salmonella, blood, disinfectants, hormones, methane, ammonia, hydrogen sulfide, etc., etc.**

Photo: courtesy of ECCSCM



# Excess nutrients, E. coli, etc. through soil to underground drainage ...



Photo: courtesy of ECCSCM

**...into streams that feed Lake Erie...**



Photo courtesy ECCSCM

**... causing summer algal blooms.**



**Satellite view of Lake Erie showing algal bloom 2015**



# What We're Doing Doesn't Work

- **Current voluntary “Best Management Practices” (BMPs) help control sediment, nitrates and TP (total phosphorus)**
  - ▶ Examples: Buffer strips, grassed waterways, cover crops, no-till
- **Best Management Practices do not control Dissolved Phosphorus**
- **Subsurface drainage systems increase DP flow to the lake**



Buffer Strip

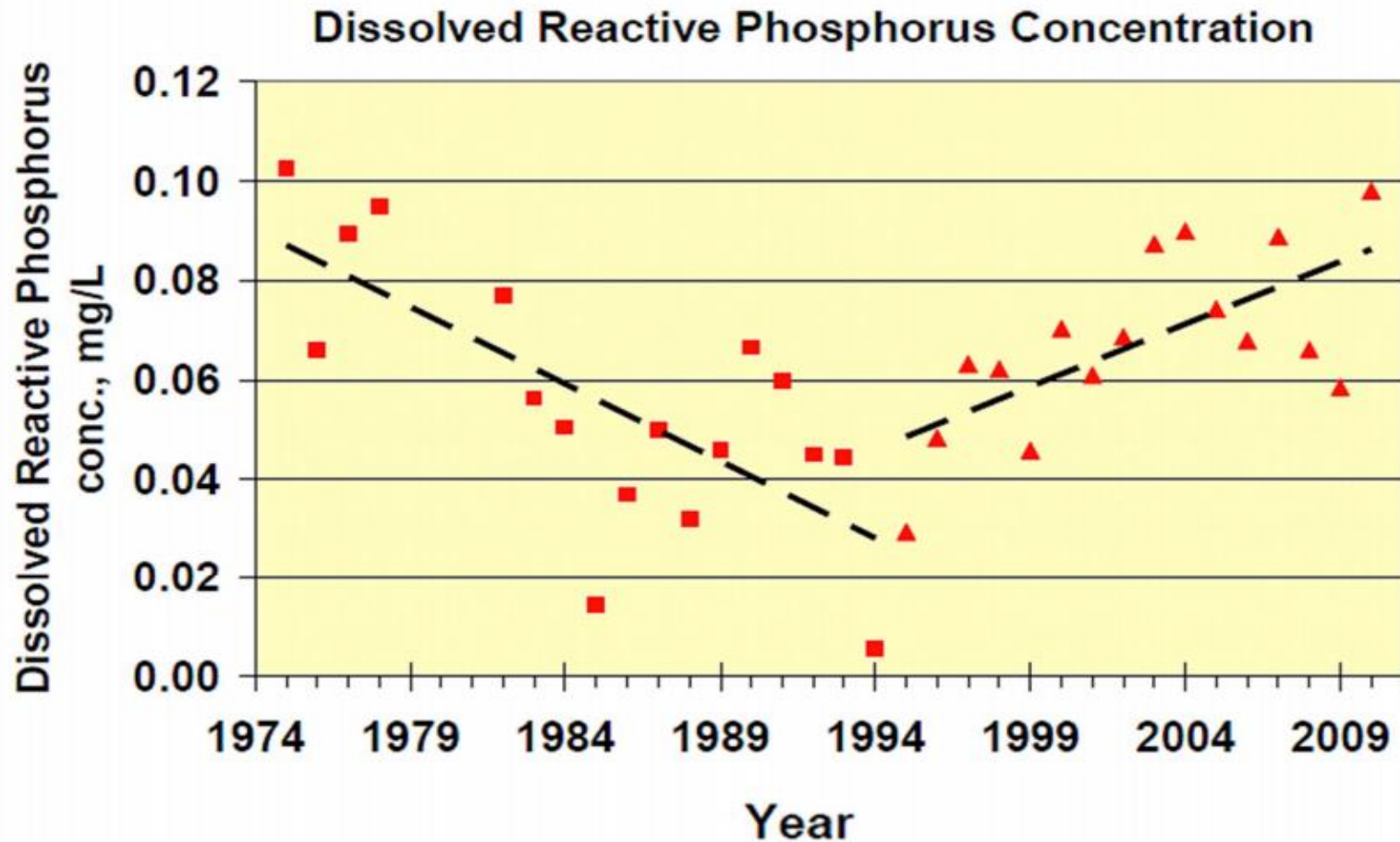
Photo: Mankato Free Press



Grassed Waterway

Photo: Evrardo

# And Here's the Proof:



Ohio Sea Grant and Stone Laboratory

# ACLE Recommends:



## **Declare Western Lake Erie Basin impaired**

Begins a process under the **Clean Water Act**

- **Determine sources and amounts**
- **Action plan** based on Total Maximum Daily Loads (TMDLs)
- ***Mandatory* reduction goals** with report cards and deadlines
- **Accountability** for meeting goals
- **Sewage treatment plants for CAFOs**
- **Apply manure the same as fertilizer**
- **Less \$ to BMPs, More \$ to Impaired process**
- **Lake Erie Bill of Rights**



# The Chesapeake Bay Story

1983-2016

- **1983-2010:** Three unsuccessful voluntary agreements over 27 years
- **2010:** EPA implements Total Maximum Daily Loads (TMDLs)
- **2011:** American Farm Bureau, Pork Producers Council, National Chicken Council, National Builders Assn. sue EPA over TMDL Plan
- **2016:** Supreme Court rejects Farm Bureau challenge to TMDL

# The Good News Is...

## TMDLs are Working for the Bay!

- Over 400 acres of oyster reefs restored in six rivers
- Over \$2 billion in federal restoration funds 2015-16
- Nutrient load estimate for 2017: down 60% from 2009



**The Washington Post**

**Scientists: Chesapeake Bay hasn't been this healthy in 33 years**

**June 15, 2018**

# This is a Political Fight

- **Karl Gebhardt, Ohio EPA's Director of Lake Erie Policy worked 19 years as Ohio Farm Bureau lobbyist: "TMDLs aren't needed," keep voluntary measures.\***
- **Best Management Practices = Good money after bad**
- **WLEB CAFOs given \$17 million in public support between 2008-2015**
- **Who will pay to clean up Lake Erie?**
  - **CAFO owners?**
  - **Ag?**
  - **Water and sewer ratepayers?**

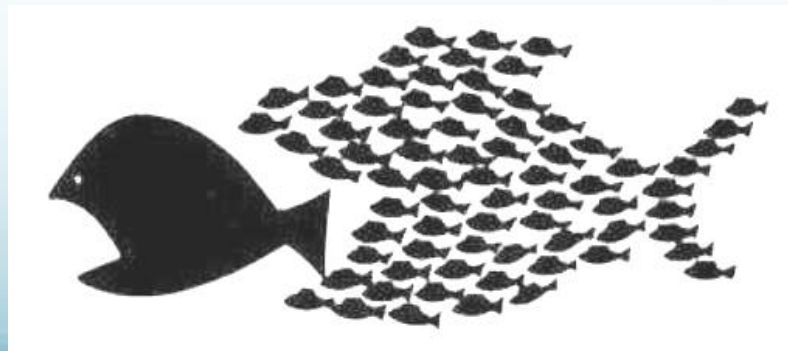
\* Toledo Blade 4/18/2018



# We Can Win

## We've Done it Before!

- In the 1960's Lake Erie was considered a dead lake
- Concerned citizens rolled up their sleeves and went to work
  - Phosphorus was banned in laundry detergent
  - Sewage treatment plants were upgraded
- Lake Erie was brought back to health!
- This time the problem is manure
- The power of democracy can save Lake Erie again!



# What You Can Do

- **Get involved!**
- **Spread the word** to friends, relatives, neighborhood groups, churches, unions
- **Demand** CAFOs install sewage treatment plants. Get local government resolutions for a moratorium on CAFOs until Lake Erie is healthy again
- **VOTE FOR** the Lake Erie Bill of Rights
- **Get active with ACLE!** Join a committee. Donate.
- **We are not going away until Lake Erie is healthy again!**



***“Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever has.” - (Margaret Mead)***

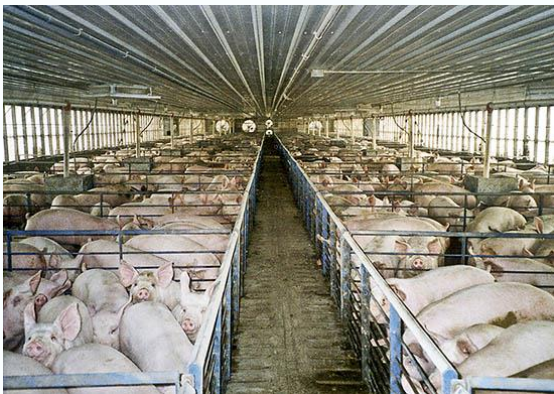
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***Thank You!***









# When you're not born a cow at a dairy CAFO, what happens?

You might go to one of these veal factories, or get fattened up for meat, belts and shoes, or whacked right out of the box and dumped in the compost area. Cows get milked to death in two years...and our taxes subsidize the whole business. Bon appetit!



# Your Tax Dollars At Work

## Grand Lake St. Mary's



Celina Daily Standard 4-27-2018



# Reading Between the Lines: Heidelberg Univ. Sampling Sites



SOURCE: Heidelberg University's National Center for Water Quality Research

THE BLADE

# 20016 USDA Environmental Quality Incentives Program (EQIP) Payment Schedule

Practice Code	Cost_Share_Program	Practice_Name	Component	Unit_Type	Unit_Cost	Cost_Type	Share_Rate
128	EQIP	Agricultural Energy Management Plan - Written	AgEMP Small, One Enterprise	Number	1601.98	PR	100
128	EQIP	Agricultural Energy Management Plan - Written	HU-AgEMP Small, One Enterprise	Number	1922.37	PR	100
316	EQIP	Animal Mortality Facility	HU-Composter with Storage, Turkey	Lb/Day	207.57	PR	100
316	EQIP	Animal Mortality Facility	Small Rotary Drum 270lbs. to 523lbs. of Daily Mortality with composter	Each	30090.98	PR	100
102	EQIP	Comprehensive Nutrient Management Plan - Written	HU-Dairy Operation Greater Than or Equal to 300 AU and Less Than 700 AU with Land Application	Number	10929.46	PR	100
102	EQIP	Comprehensive Nutrient Management Plan - Written	Dairy Operation Greater Than or Equal to 700 AU with Land Application	Number	10127.28	PR	100
412	EQIP	Grassed Waterway	HU-GWW > 1,000ft long	Acre	1668.51	PR	100
412	EQIP	Grassed Waterway	GWW with geotextile or stone checks	Acre	2085.57	PR	100
327	EQIP	Conservation Cover	HU-Introduced Species	Acre	164.82	PR	100
327	EQIP	Conservation Cover	Native Species	Acre	231.28	PR	100
647	EQIP	Early Successional Habitat Development/Management	Habitat Selective Herbicide	Acre	35.27	PR	100
595	EQIP	Integrated Pest Management (IPM)	HU-Advanced IPM Orchard All RCs	Acre	238.4	PR	100
595	EQIP	Integrated Pest Management (IPM)	Advanced IPM S-Farm All RCs	Each	782.39	PR	100
670	EQIP	Lighting System Improvement	HU-Lighting LED dusk to dawn lighting fixture	Each	974.35	PR	100
670	EQIP	Lighting System Improvement	Lighting - LED high bay lighting fixtures	Each	1380.6	PR	100
606	EQIP	Subsurface Drain	HU-Corrugated Plastic Pipe (CPP), Single-Wall, = 8 Inches	Foot	5.79	PR	100
606	EQIP	Subsurface Drain	Corrugated Plastic Pipe (CPP), Twin-Wall, = 8 Inches	Foot	10.08	PR	100
313	EQIP	Waste Storage Facility	Earthen Storage Facility greater than 50K ft3 Storage	CuFt	0.21	PR	100
313	EQIP	Waste Storage Facility	Earthen Storage Facility High Water Table	CuFt	0.99	PR	100
642	EQIP	Water Well	HU-Plastic Casing for unconsolidated geologic sites with unstable rock formations	Foot	28.42	PR	100
642	EQIP	Water Well	Steel casing for consolidated geologic sites with stable rock formations	Foot	18.89	PR	100



# Help Wanted – Making Graphs

Ohio Partial Agri Stats [Compatibility Mode]

All numbers other than number of farms are in 000s											
Year	Number of Farms	Corn for Grain Acres	Soybean Acres	Winter Wheat Acres	Hay Acres	Oat Acres	Total Acres	Cattle	Milk Cows	Hogs	Sheep
2016										2,700	
2015										2,500	
2014										2,230	
2013										2,200	
2012										2,050	
2011										2,190	
2010										2,040	
2009	74,900	3,140	4,530	980	1,040	45	9,735	1,280	277	2,010	130
2008	75,000	3,120	4,480	1,090	1,140	50	9,880	1,250	274	1,940	125
2007	75,700	3,610	4,130	730	1,150	55	9,675	1,260	274	1,810	141
2006	76,200	2,960	4,620	960	1,210	55	9,805	1,280	273	1,680	141
2005	76,500	3,250	4,480	830	1,200	60	9,820	1,300	266	1,560	142
2004	77,200	3,110	4,420	890	1,190	50	9,660	1,230	258	1,450	140
2003	77,600	3,070	4,280	1,000	1,350	60	9,760	1,220	260	1,520	150
2002	77,800	2,970	4,720	810	1,320	55	9,875	1,250	260	1,440	140
2001	78,000	3,170	4,580	900	1,390	85	10,125	1,240	265	1,430	142
2000	79,000	3,300	4,440	1,110	1,280	90	10,220	1,240	258	1,490	134
1999	79,000	3,200	4,500	1,030	1,240	100	10,070	1,230	260	1,480	125
1998	79,000	3,340	4,390	1,160	1,160	100	10,150	1,300	265	1,700	135
1997	79,000	3,550	4,340	1,090	1,250	90	10,320	1,350	275	1,700	140
1996	78,000	2,800	4,490	1,330	1,200	90	9,910	1,470	285	1,500	153
1995	79,000	3,100	4,030	1,210	1,250	100	9,690	1,400	290	1,800	162
1994	80,000	3,500	3,990	1,180	1,280	120	10,070	1,380	301	1,800	198
1993	81,000	3,280	4,110	1,010	1,250	150	9,800	1,490	305	1,630	155
1992	78,000	3,550	3,680	1,115	1,300	170	9,815	1,480	320	1,750	175
1991	80,000	3,400	3,770	1,080	1,300	170	9,720	1,460	330	1,925	230
1990	83,000	3,450	3,480	1,270	1,400	230	9,830	1,500	345	2,000	205
1989	85,000	2,980	3,980	1,230	1,625	250	10,065	1,600	353	2,080	200
1988	85,000	3,000	3,700	920	1,625	200	9,445	1,820	350	2,210	210
1987	84,000	3,100	3,900	850	1,400	250	9,500	1,800	350	2,100	245
1986	88,000	3,720	3,620	1,050	1,460	160	10,010	1,840	370	2,000	225
1985	89,000	4,030	3,870	950	1,450	310	10,610	1,835	365	1,980	220
1984	90,000	3,900	3,770	1,100	1,350	220	10,340	1,880	383	1,970	225
1983	92,000	2,800	3,280	1,200	1,260	240	8,780	1,850	393	2,200	250
1982	93,000	4,000	3,700	1,200	1,340	340	10,580	1,850	382	1,920	260
1981	94,000	3,750	3,450	1,600	1,420	270	10,490	1,815	375	2,050	260