

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

# PFAS Technical Group

August 20, 2021 | [DNR.WI.GOV](https://DNR.WI.GOV)



# Agenda

- Intro to PFAS Technical Group
- Minnesota Biosolids Approach
- Michigan Biosolids Approach
- Conclusions & Next Steps

# PFAS Technical Group

- Supplement External Advisory Group – similar default schedule
- Information Sharing - could indirectly inform policy development
- Open Membership – run by OEC & PFAS researchers
- Focus on External Presentations – limited DNR updates
- Potential Ad-Hoc Groups



# Example Topics

- Remediation, Disposal & Lab Innovations
- Sampling Results (DNR or others)
- Case Studies
- Research Results & Collaboration Opportunities
- Performance/Safety of Non-Fluorinated Alternatives
- Communication Tools & Concerns
- Standards-Related Info
- Policy Implications?



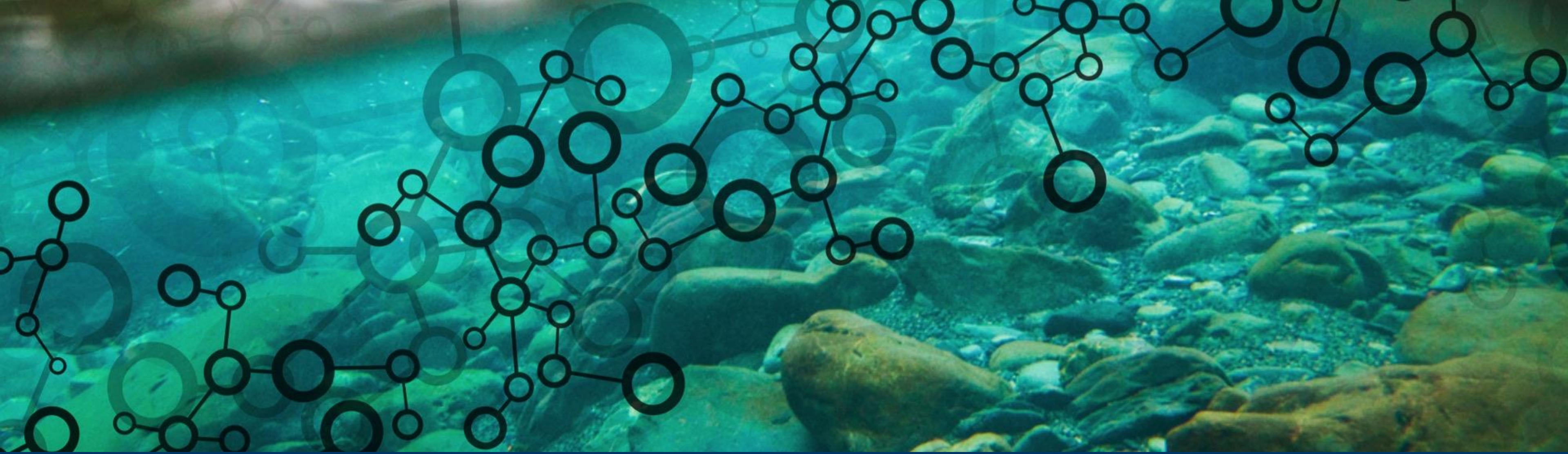
# Wisconsin Biosolids Approach (Proposed)

- Biosolids sampling
- Tiered system
- Source reduction
- Farmer and landowner communication
- Stakeholder engagement



\*\*These will be discussed in more detail during this afternoon's External Advisory Group meeting





# Minnesota Biosolids Approach



# Minnesota Biosolids Approach for PFAS

- In Progress:
  - MN PFAS BluePrint
  - Legislative-Citizen Commission on Minnesota Resources (LCCMR)
    - Developing Strategies to Manage PFAS in Land-Applied Biosolids
    - 1.5 Million Research Project
  - Legislative Actions
- EPA Biosolids Risk Assessment





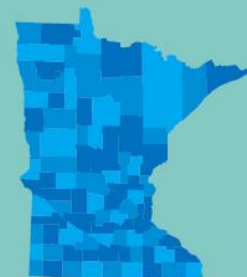
February 2021

## Minnesota's PFAS Blueprint

A plan to protect our communities and our environment from per- and polyfluorinated alkyl substances

Minnesota's PFAS Blueprint supports a holistic and systematic approach to address PFAS.

- Acknowledges interconnections between programs, policies, and regulations.
- Proposes strategic path forward.





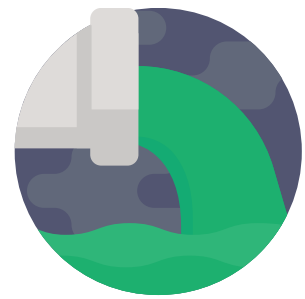
# Minnesota's PFAS Blueprint: Contents

## Outline

- *Introduction:* Provide an overview of PFAS, including the history of PFAS response in Minnesota
- *10 Issue Papers:*
  - Cover page – 1-page overview of topic
  - Introduction – scientific and regulatory context needed to understand the topic
  - Past and ongoing activities – what was done, who led the effort, why was it beneficial (what did we learn), challenges, how much time/money
  - Gaps and key areas of opportunities – initiatives under consideration that could fill gaps
  - Areas of intersection with other topics
- *Appendixes:* Preliminary designation of “2021 legislative priorities,” “short-term,” and “medium to long-term,” acknowledging resource needs and other contingencies

**Goal:** Ground discussion of next steps for managing PFAS in various topic area

# Ten topic areas:



Preventing PFAS pollution



Limiting PFAS exposure from food



Measuring PFAS effectively and consistently



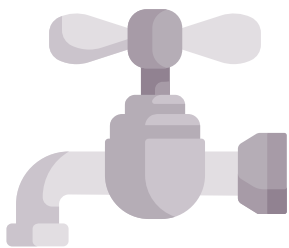
Understanding risks from PFAS air emissions



Quantifying PFAS risks to human health



Protecting ecosystem health



Limiting PFAS exposure from drinking water



Remediating PFAS-contaminated sites



Ensuring safe consumption of fish and game



Managing PFAS in waste



# General Approach



## 1 Prevent

PFAS pollution  
wherever possible



## 2 Manage

PFAS pollution when  
prevention is not  
feasible or pollution has  
already occurred



## 3 Clean up

PFAS contaminated sites

# Managing PFAS in waste – gaps and opportunities

## **Research:**

- Understand the fate and transport of PFAS in land-applied biosolids
- Investigate PFAS groundwater contamination at landfills in the Closed Landfill Program

## **Source reduction:**

- Advance pollution prevention (P2) initiatives, up to and including strategies to ban or restrict PFAS uses
- Support WWTPs and other waste facilities in identifying and reducing sources of PFAS to their facilities

## **Regulation:**

- Monitoring at permitted facilities; Water Quality Standards for PFAS



# Monitoring considerations in the PFAS Blueprint

- The Blueprint included several short-term initiatives related to PFAS monitoring and PFAS emissions reporting
  - Develop a plan for monitoring PFAS at active landfills
  - Develop a plan for monitoring PFAS at NPDES permitted facilities
  - Add PFAS to Minnesota's Air Emissions Inventory (ongoing)
  - Develop a plan for performance testing for PFAS at permitted air sources
  - Update guidance for recommended analyte sampling at clean-up sites to include PFAS
- The PFAS Monitoring Plan will coordinate these short-term initiatives related to source discovery and mitigation

**Translating the Blueprint to policy actions**

# Multi-sector PFAS Monitoring Plan

- Different approaches being discussed with our NPDES/SDS facilities
  - All facilities
  - Facilities with industrial inputs
  - Major facilities
- Stakeholder meetings
- Proposed plans this fall





# LCCMR Project: Developing Strategies to Manage PFAS in Land-Applied Biosolids

- Analyze alternative disposal and treatment options and develop tools for managing PFAS-contaminated land applied substances like biosolids
- Evaluate how PFAS moves from land applied substances, like biosolids, into soils, water, and crops
- Contact information:
  - Carl Rosen, U of M Department of Soil, Water, Climate
    - 612-625-8114
    - [crosen@umn.edu](mailto:crosen@umn.edu); [rosen006@umn.edu](mailto:rosen006@umn.edu)
  - Summer Streets, MPCA
    - 651-757-2761
    - [summer.streets@state.mn.us](mailto:summer.streets@state.mn.us)

# MN Legislative Outcomes

- \$600,000 for developing and implementing a plan to reduce PFAS to WWTF
  - Working with a defined advisory committee
    - Identify sources of PFAS
    - Source reduction strategies
    - Publish and distribute education activities
    - Identify issues of further concern
    - Publish report by Jan 1, 2023
  - Food packaging ban

## Sec. 105. [325E.075] FOOD PACKAGING; PFAS.

Subdivision 1. Definitions. (a) For purposes of this section, the following terms have the meanings given.

(b) "Food package" means a container applied to or providing a means to market, protect, handle, deliver, serve, contain, or store a food or beverage. Food package includes:

(1) a unit package, an intermediate package, and a shipping container;

(2) unsealed receptacles, such as carrying cases, crates, cups, plates, bowls, pails, rigid foil and other trays, wrappers and wrapping films, bags, and tubs; and

(3) an individual assembled part of a food package, such as any interior or exterior blocking, bracing, cushioning, weatherproofing, exterior strapping, coatings, closures, inks, and labels.

(c) "Perfluoroalkyl and polyfluoroalkyl substances" or "PFAS" means a class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom.

(d) "Intentionally added" means PFAS deliberately added during the manufacture of a product where the continued presence of PFAS is desired in the final package or packaging component to perform a specific function.

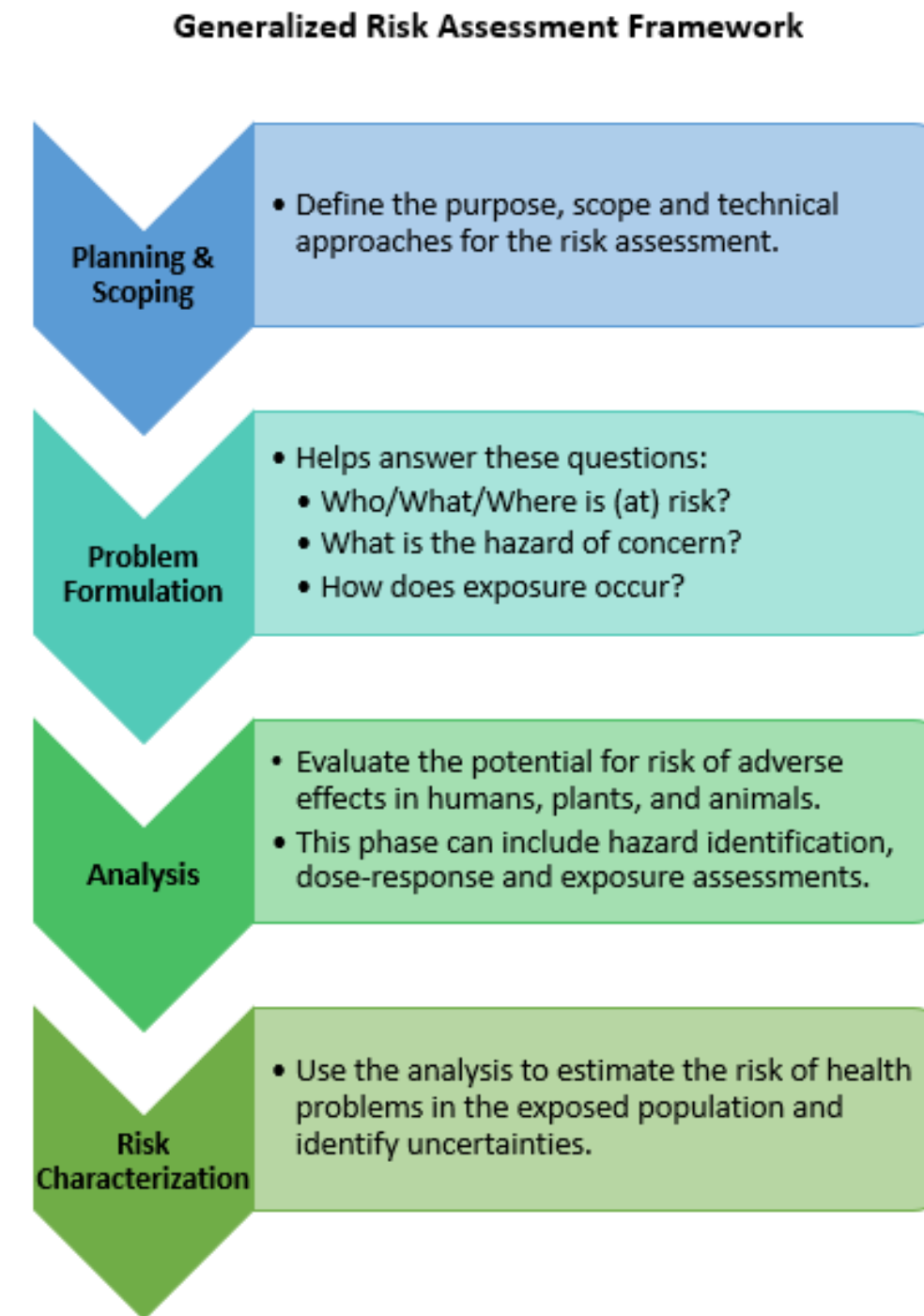
Subd. 2. Prohibition. No person shall manufacture or knowingly sell, offer for sale, distribute for sale, distribute, or offer for use in Minnesota a food package that contains intentionally added PFAS.

Subd. 3. Enforcement. (a) The commissioner of the Pollution Control Agency may enforce this section under sections 115.071 and 116.072. The commissioner may coordinate with the commissioners of commerce and health in enforcing this section.

(b) When requested by the commissioner of the Pollution Control Agency, a person must furnish to the commissioner any information that the person may have or may reasonably obtain that is relevant to show compliance with this section.

# Overview of EPA PFAS Activity

- EPA PFAS Action Plan
- EPA Council on PFAS
- **Biosolids Risk Assessment**
- PFAS Analytical Methods Development and Sampling Research
- PFAS Innovative Treatment Team
- Drinking Water Health Advisory Limit





- Moving forward with monitoring plan for NPDES/SDS facilities, including biosolids
- Moving forward with research to better understand the fate and transport of biosolids and assess treatment options and costs
- Source reduction work





A scenic sunset over a lake with canoes in the foreground. The sun is low on the horizon, casting a golden glow across the sky and reflecting on the water. Silhouettes of trees and hills are visible in the background. In the foreground, several canoes are docked at a wooden pier. The overall mood is peaceful and serene.

# Questions?

**Sherry Bock**

*sheryl.bock@state.mn.us*

218-316-3882





MICHIGAN DEPARTMENT OF  
ENVIRONMENT, GREAT LAKES, AND ENERGY

# Michigan PFAS & Biosolids Strategy

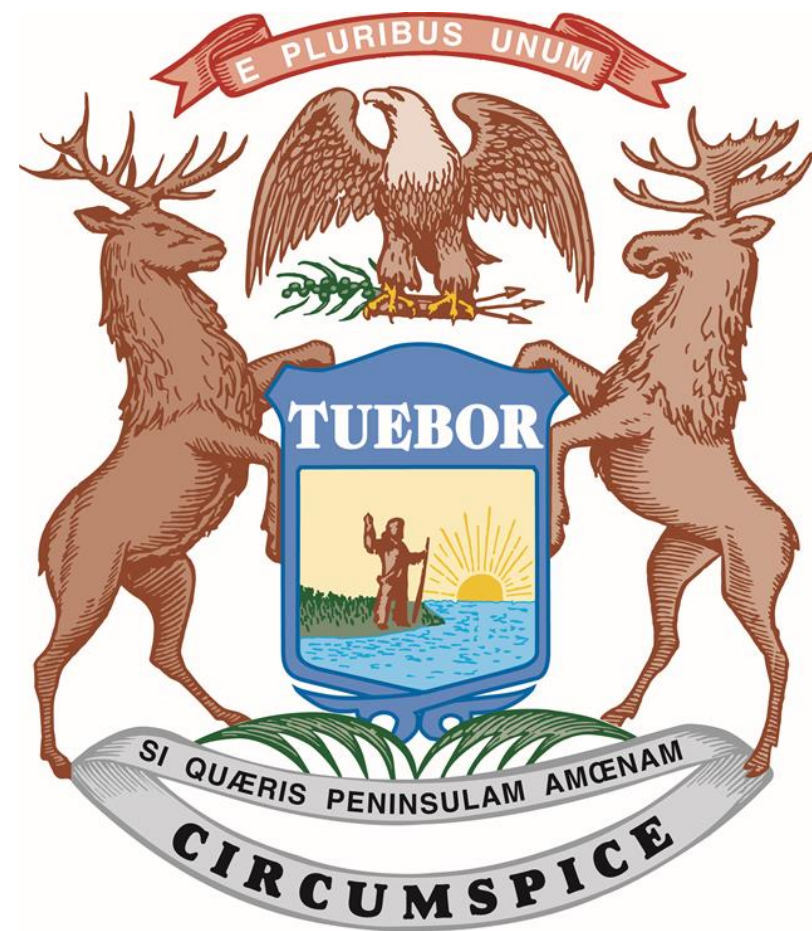
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*August 20, 2021*

*Mike Person, WRD Biosolids Program*



# Michigan PFAS Action Response Team (MPART)



- Unique multi-agency approach
- Leads coordination and cooperation among all levels of government
- Directs implementation of state's action strategy
- WRD -Member of Great Lakes PFAS Task Force

# Biosolids Regulations

## ***Currently no established criteria for PFAS for biosolids under 40 CFR Part 503***

40 CFR Part 503 Standards for Land Application –Adopted 1993

- Nutrient/ pollutant/ pathogen limits based on extensive multi-pathway risk assessment.

Michigan Part 24 Administrative Rules  
Land Application of Biosolids –  
promulgated 1999.

The EPA is currently in the process of conducting a risk assessment for additional pollutants, including PFAS.

*\* Will likely take years to complete the evaluation*





States under increasing pressure to answer questions about PFAS in Biosolids

### Limited Options:

- Do Nothing
- Adopt a standard - may not accurately characterize the fate of the chemical
- Adopt a Strategy that focuses on using sampling to
  - mitigate risks
  - Drive source reduction efforts to continue lowering concentrations in Biosolids



## INTERIM STRATEGY FOR LAND APPLICATION OF BIOSOLIDS CONTAINING PFAS WATER RESOURCES GUIDANCE

- ❑ *EGLE's goal for wastewater treatment plants is to continue reducing PFAS concentrations in biosolids to the maximum extent practicable, while achieving or maintaining compliance with Surface Water Quality Standards (WQS) at the WWTP effluent.*
- ❑ *Through implementation of this strategy, EGLE strives to prevent further land application of industrially impacted biosolids, mitigate (reduce) risks moving forward, and continue driving PFAS concentrations present in impacted biosolids down as quickly as possible.*

## Substantial PFOS Reduction at WWTPs with Exceedances

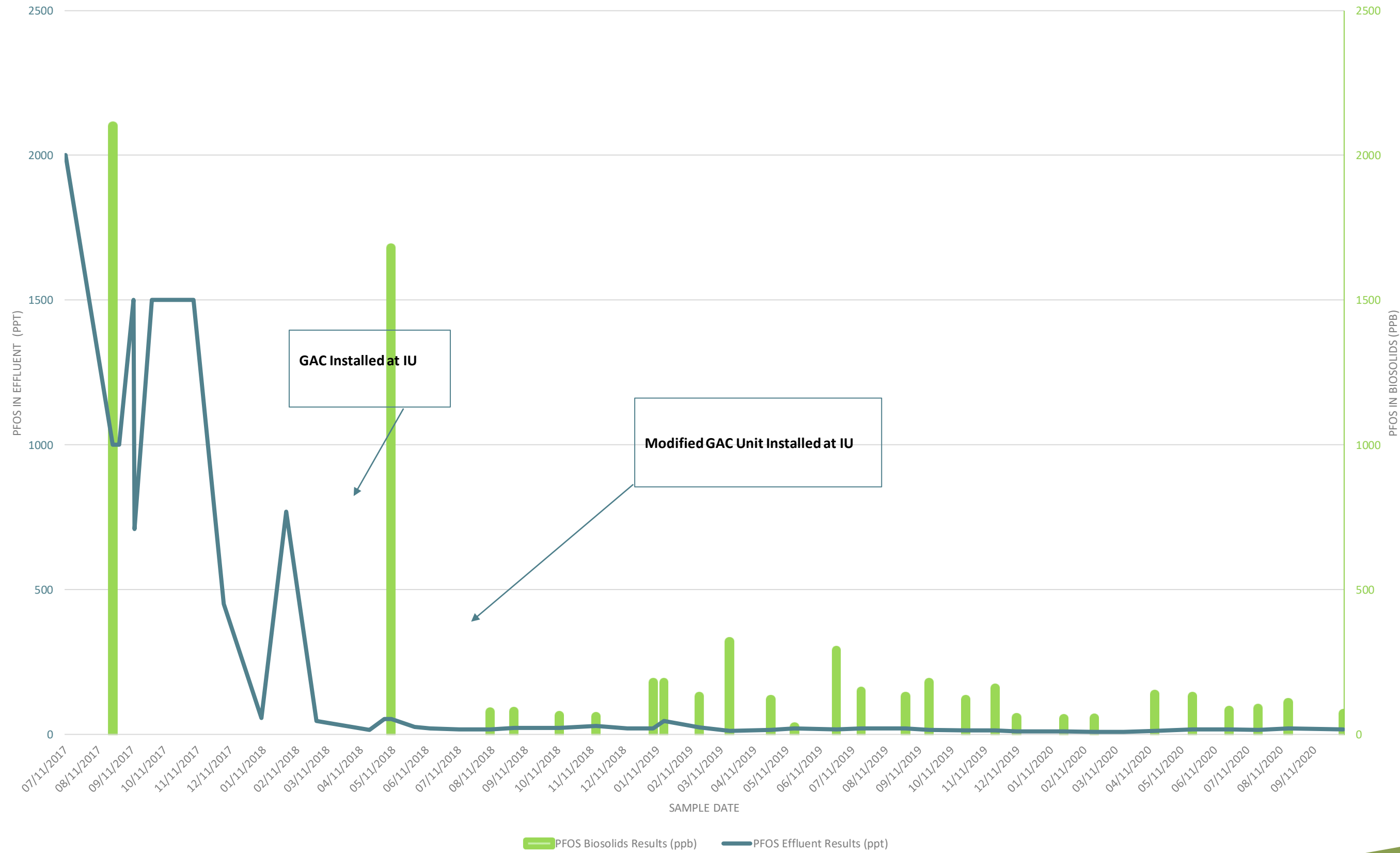
Municipal WWTP	Recent PFOS Effluent* (ng/L)	PFOS Reduction (highest to most recent)	Actions Taken to Reduce PFOS
WWTP #14	<1.9	99 percent	Treatment (GAC) at source (1)
WWTP #49	3.4	97 percent	Treatment (GAC/Resin) at source (1)
WWTP #50	<7.48	99 percent	Treatment (GAC) at source (1)
WWTP #53	4.84	90 percent	Treatment (GAC) at sources (2), change water supply
WWTP #54	5.4	98 percent	Eliminated leak of AFFF, some cleaning
WWTP #57	4.9	99 percent	Treatment (GAC) at source (1)
WWTP #92	<47.7	99 percent	Treatment (GAC) at source (1)
WWTP #38	8.8	68 percent	Treatment (GAC) at source (17)
WWTP #9	9.4	33 percent	Restricted landfill leachate quantity acceptance
WWTP #74	10	99 percent	Elimination of source PFOS (2)

\*Data received as of June 24, 2021

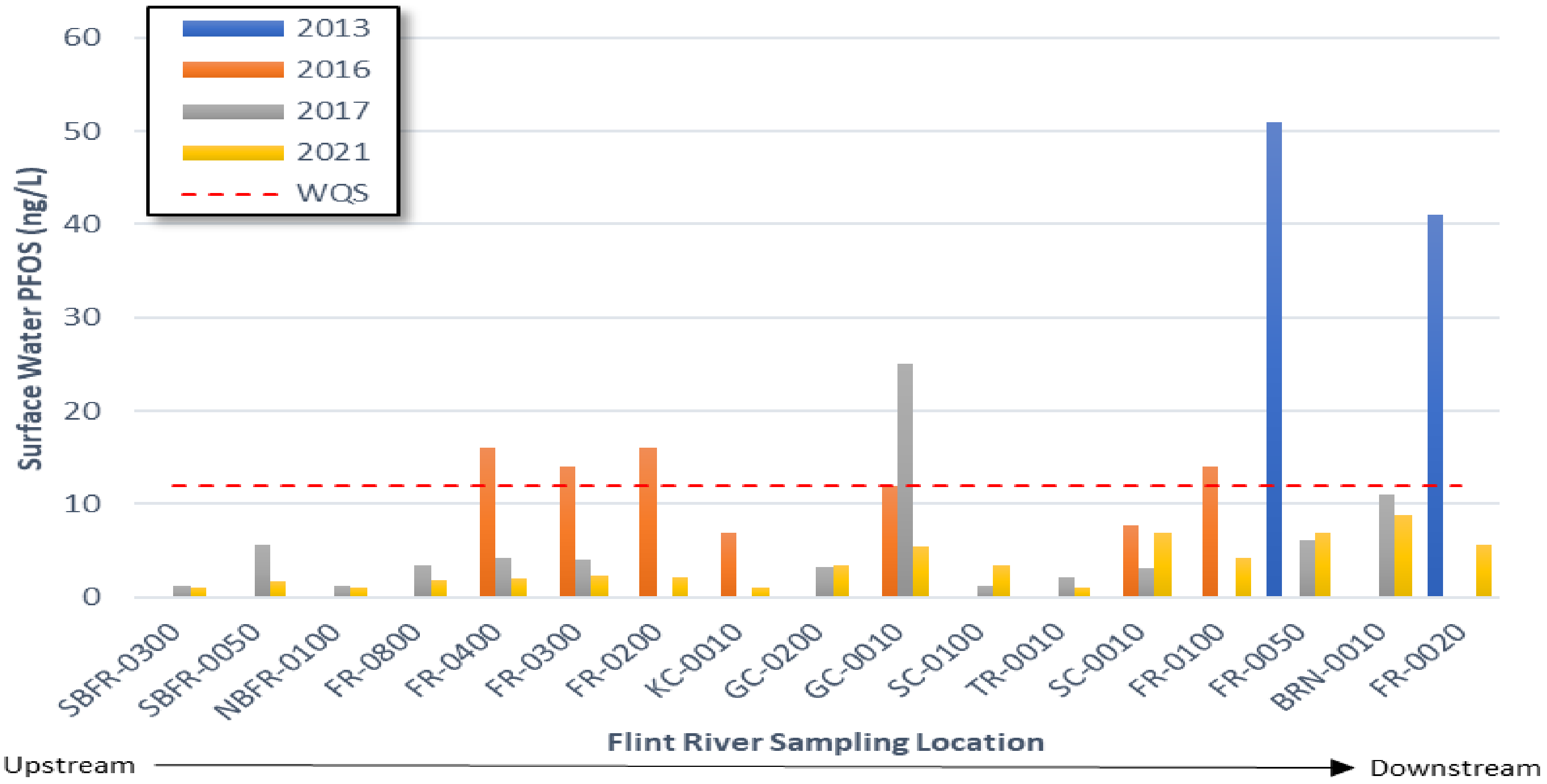
\*\* Greater than Water Quality Standards



# PFOS Reduction After IU Pretreatment

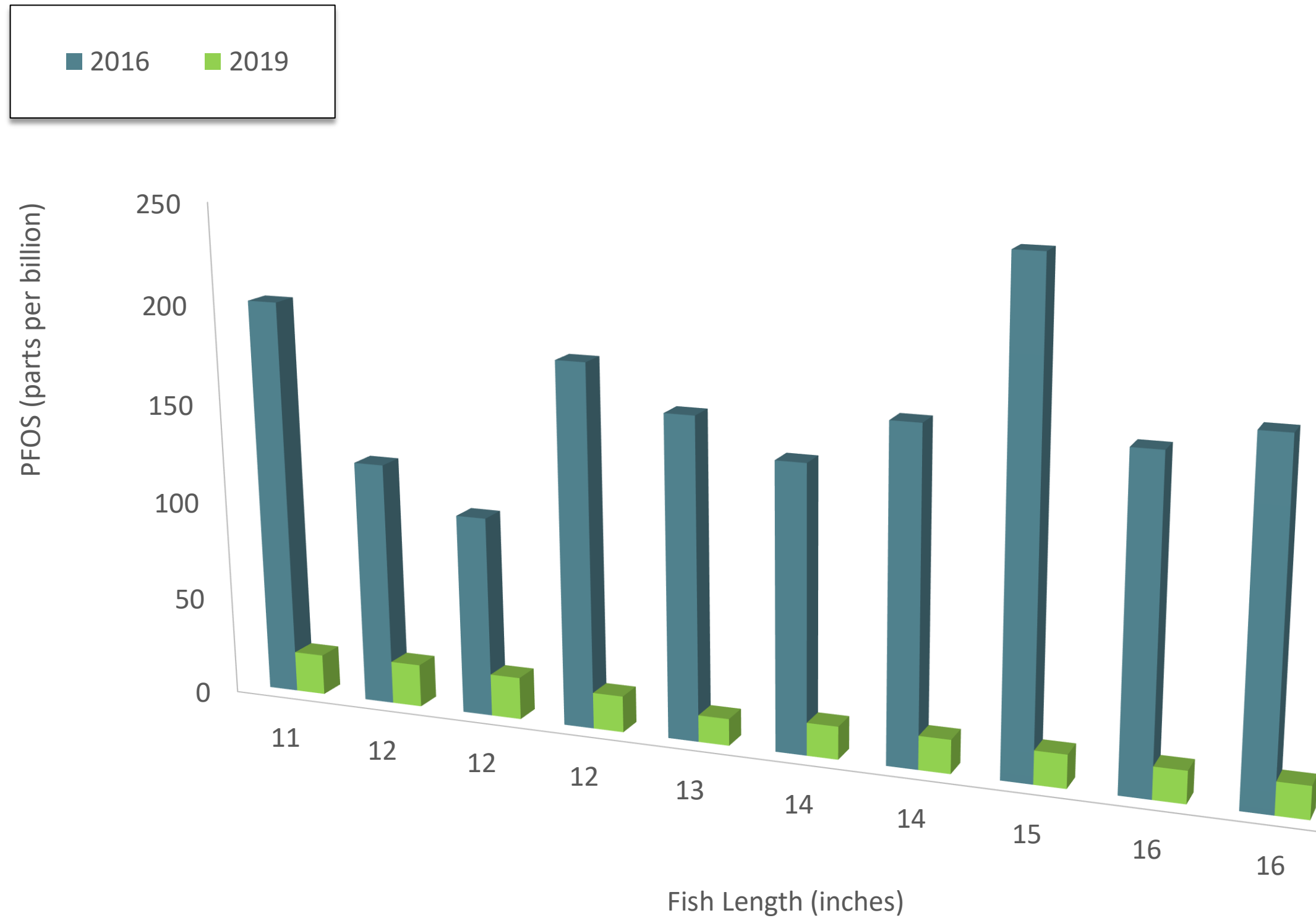


# Up / Downstream Surface Water PFOS Concentrations





# Holloway Reservoir - Bass Fillets

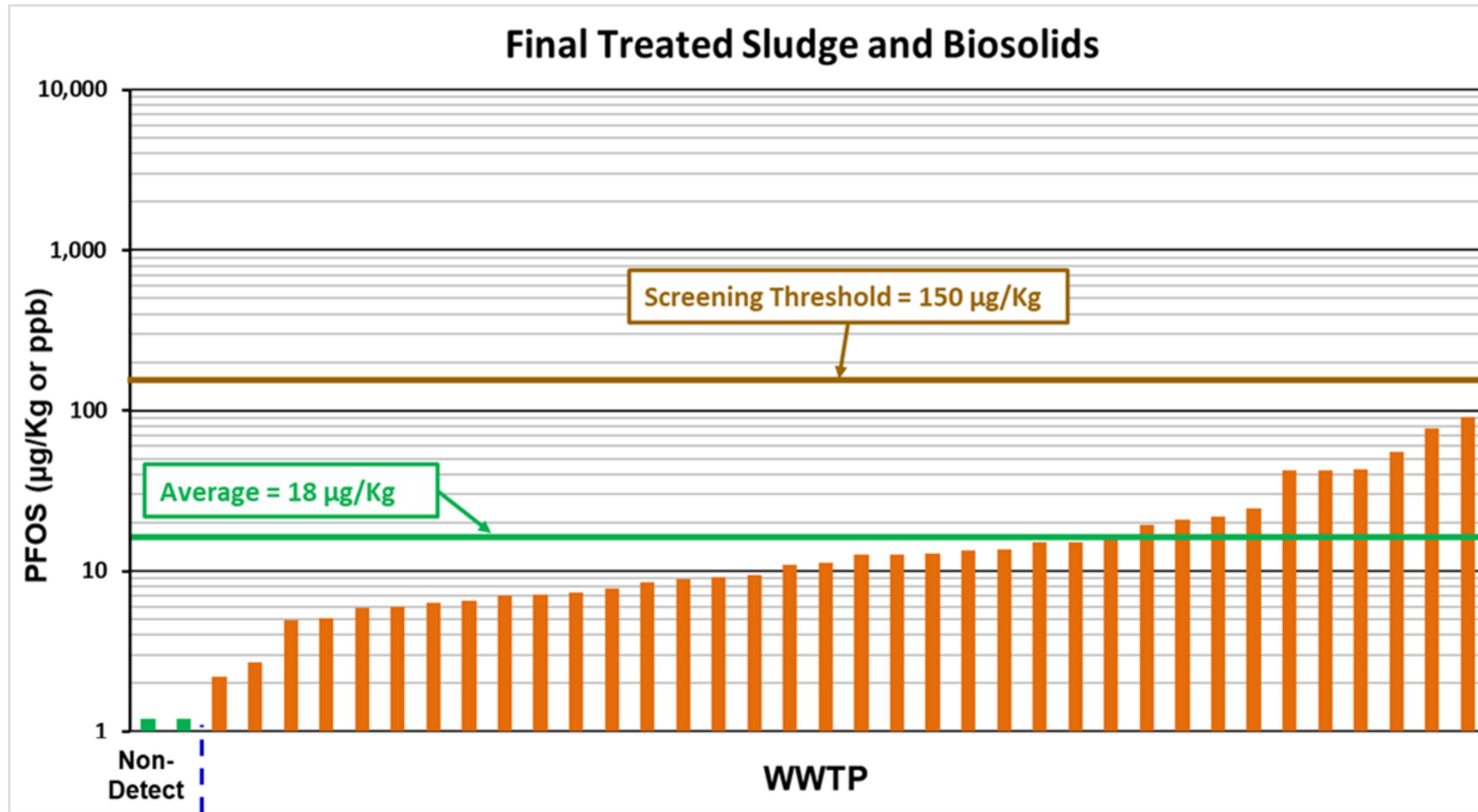


# Statewide Biosolids Study

## What we have Learned - how that's being applied to Interim biosolids strategy

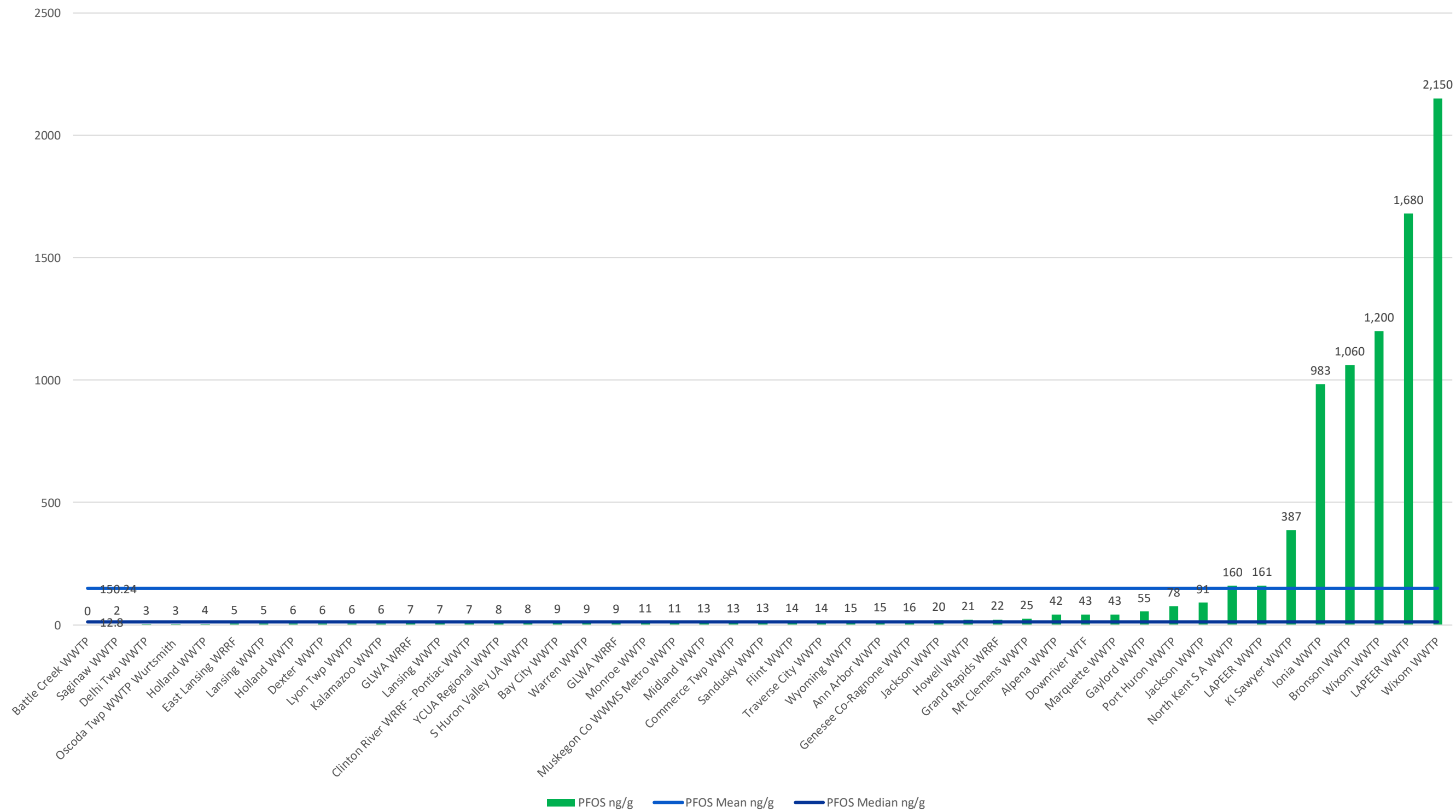
- Selected /Sampled Effluent, Influent, & Biosolids from 42 WWTPs
  - 20 Largest WWTPS
  - Others- Various treatment processes
  - Some with no industrial users
- Conduct Biosolids Site Investigations
  - (soil, gw, sw) of Biosolids Land Application Sites

# Sludge/Biosolids PFOS Results Excluding Industrially Impacted





# Statewide Study - WWTP Stabilized Sludge/Biosolids PFOS Results



# PFAS in Sludge /Biosolids - When is it considered industrially impacted?

*No Regulatory Limit - Looking to EPA to lead*

- Threshold level of 150 ppb is being used at the point at which biosolids is considered industrially impacted.
- Determination of “industrially impacted” is based on a number of factors including
  - Review of literature and land application studies with high PFAS concentrations (Results of Statewide Biosolids Study)
  - Results of soil /gw sampling of land application sites in Michigan
  - Natural Break Point in results

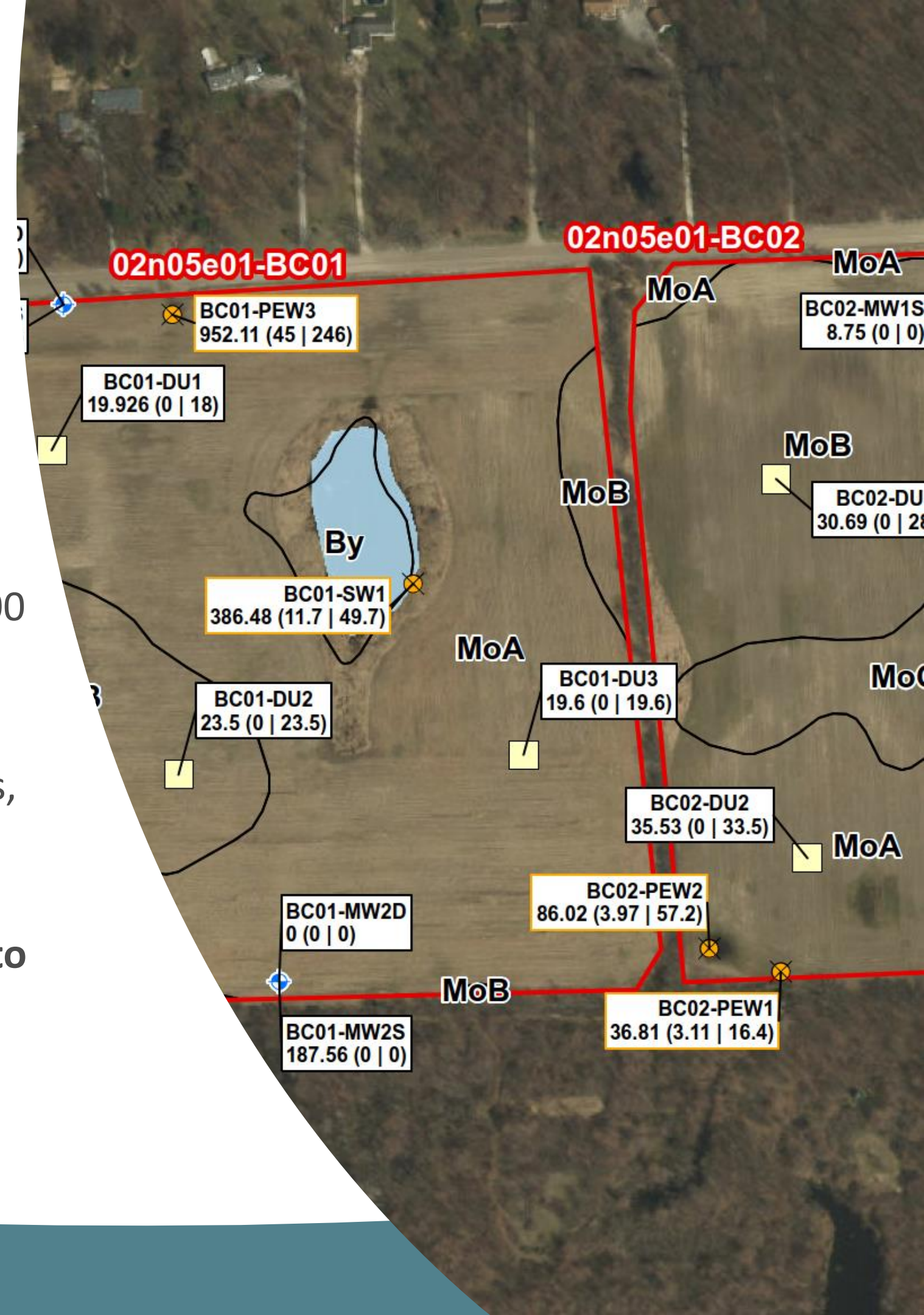
*\*\*This is not a risk-based number. As more information about fate and transport of these chemicals becomes available, including the field study results, this level will be reevaluated as necessary*

# Statewide Biosolids Study

## Land Application Field Screening

22 Fields Screened from 8 WWTPS

- 11 Sites from wwtps w/ PFOS > 1000 ppb
- 11 sites w/ PFOS < 50 ppb
- Sampled: Soils, groundwater, tile drains, swales, ponding/perched waters and surface waters
- Developed field prioritization process to screen "worst case scenarios" for each facility





# Statewide Biosolids Study

## *Summary of Results -*

- *Generally found higher concentrations on historic sites of WWTPs deemed industrially impacted.*
- *Did not find significant wide scale groundwater impacts at the historic sites. Still have more work to do to investigate potential legacy sites.*
- *Did find some elevated concentrations in surface water, ie ponded water ect.*
- *Source reduction efforts have been highly successful in significantly decreasing PFOS concentrations in the influent, effluent, and biosolids/sludge.*

# Detailed Report Document

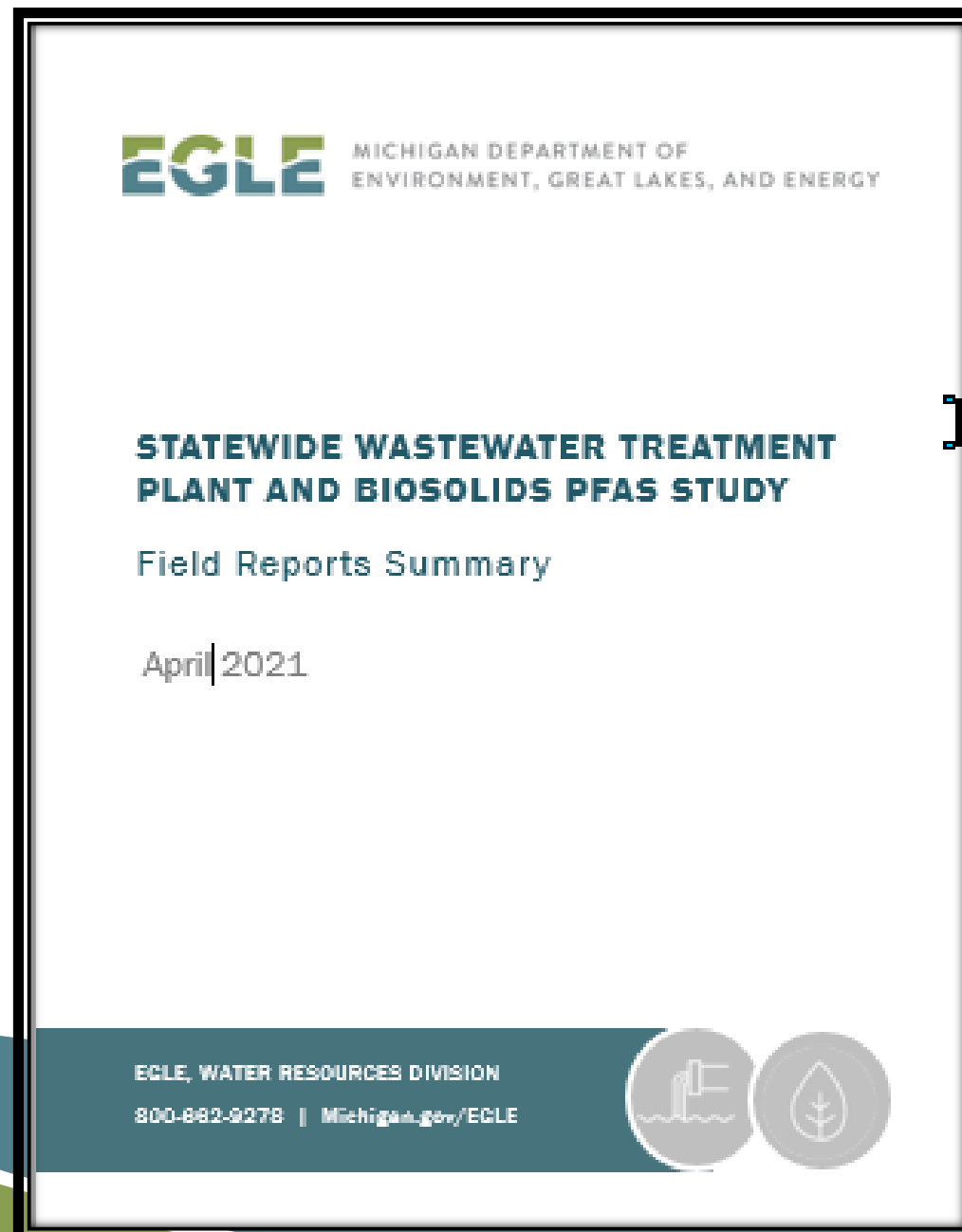
*\* Detailed Report  
finalized April 2021*



# EGLE Field Report Summary

## Field Reports

- 6 Technical Field Reports
- Posted on EGLE Biosolids Page





# Interim Strategy – Land Application of Biosolids Containing PFAS

*\*Finalized March  
2021*

## **LAND APPLICATION OF BIOSOLIDS CONTAINING PFAS**

Interim Strategy

March 2021

EGLE, WATER RESOURCES DIVISION  
800-662-9278 | [Michigan.gov/EGLE](https://www.michigan.gov/EGLE)



# Interim Strategy – Land Application of Biosolids Containing PFAS

*Mass mailing  
letters to all  
WWTPs with  
approved RMPs*



GRETCHEN WHITMER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF  
ENVIRONMENT, GREAT LAKES, AND ENERGY  
LANSING

**EGLE**  
LIESL EICHLER CLARK  
DIRECTOR

March 29, 2021

Permittee  
Site Name  
Permittee Address

SUBJECT: Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) and the Land Application of Biosolids – Notice of Modification of Approved Residuals Management Program  
Designated Name: Site Name  
National Pollutant Discharge Elimination System (NPDES) Permit No. Permit Number

Dear Permittee:

This letter is being sent concerning Site Name's (hereafter Facility) authorization to land-apply bulk biosolids or prepare bulk biosolids for land application under your approved Residuals Management Program (RMP). This letter provides notification that the Department of Environment, Great Lakes, and Energy (EGLE), Water Resources Division (WRD) is hereby imposing additional requirements and/or limitations and effectively modifying the approved RMP. Specifically, facilities that plan to land apply biosolids on or after July 1, 2021, shall analyze the biosolids for PFAS prior to application. Additional requirements concerning submittal and evaluation of results, potential limitations on land application, and communication of the results to landowners/farmers are also provided herein.

The implementation of these measures is part of a strategy to mitigate risk to public health and the environment from potential adverse effects of an emerging pollutant, PFAS. These additional requirements are considered a modification to approved RMP and are made in accordance with provisions outlined within the Michigan's Part 24 Administrative Rules, Land Application of Biosolids (Part 24 Rules), promulgated pursuant to Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), specifically Rule 2404 (1), and language contained within existing discharge permits.

This modification to your approved RMP is being implemented as part of an interim strategy to evaluate and reduce PFAS in biosolids that are land applied in Michigan. The *Interim Strategy for Land Application of Biosolids Containing PFAS, Water Resources Guidance (Interim Strategy)* is part of a larger effort which WRD has undertaken to increase our

# Michigan Part 24 Administrative Rules

## *Legal Authority -*

*Rule 2404. (1) On a case-by-case basis, the permitting authority may impose requirements for the use of biosolids in addition to, or more stringent than, the requirements in these rules if necessary, to protect the public health and the environment from any adverse effect of a pollutant in the biosolids.*



# Strategy Components - Land Application of Biosolids Containing PFAS

*\*\*\* Depending on results and sources, additional sampling may be required*

**Sampling** - Additional monitoring for PFAS of land applied biosolids.

*For land application occurring after July 1, 2021*

**One Sample Per Year – All USEPA Majors/All IPPs that intend to land apply.**

- *Collect /analyze a minimum of one representative biosolids sample each year.*

**One Sample Each Permit Cycle (five years) – All other WWTPs that intend to land apply biosolids.**

- *Collect a minimum of one representative prior to land application. Thereafter, 1 additional samples based on permit cycle. One-time RMP approvals (ie lagoons) one representative sample per cell for PFAS analysis prior.*

# Strategy Components - Land Application of Biosolids Containing PFAS

Schedule of Compliance through Miwaters –

Submit Analytical Results at least 2 weeks prior to land application. Plan for over 4 week turn around time

## **PFOS at or above 150 µg/kg.**

- *Biosolids are deemed Industrially Impacted and cannot be land applied. Arrange alternate disposal.*
- *Sample effluent and investigate /develop a source reduction program.*

## **PFOS at or above 50 µg/kg but below 150 µg/kg.**

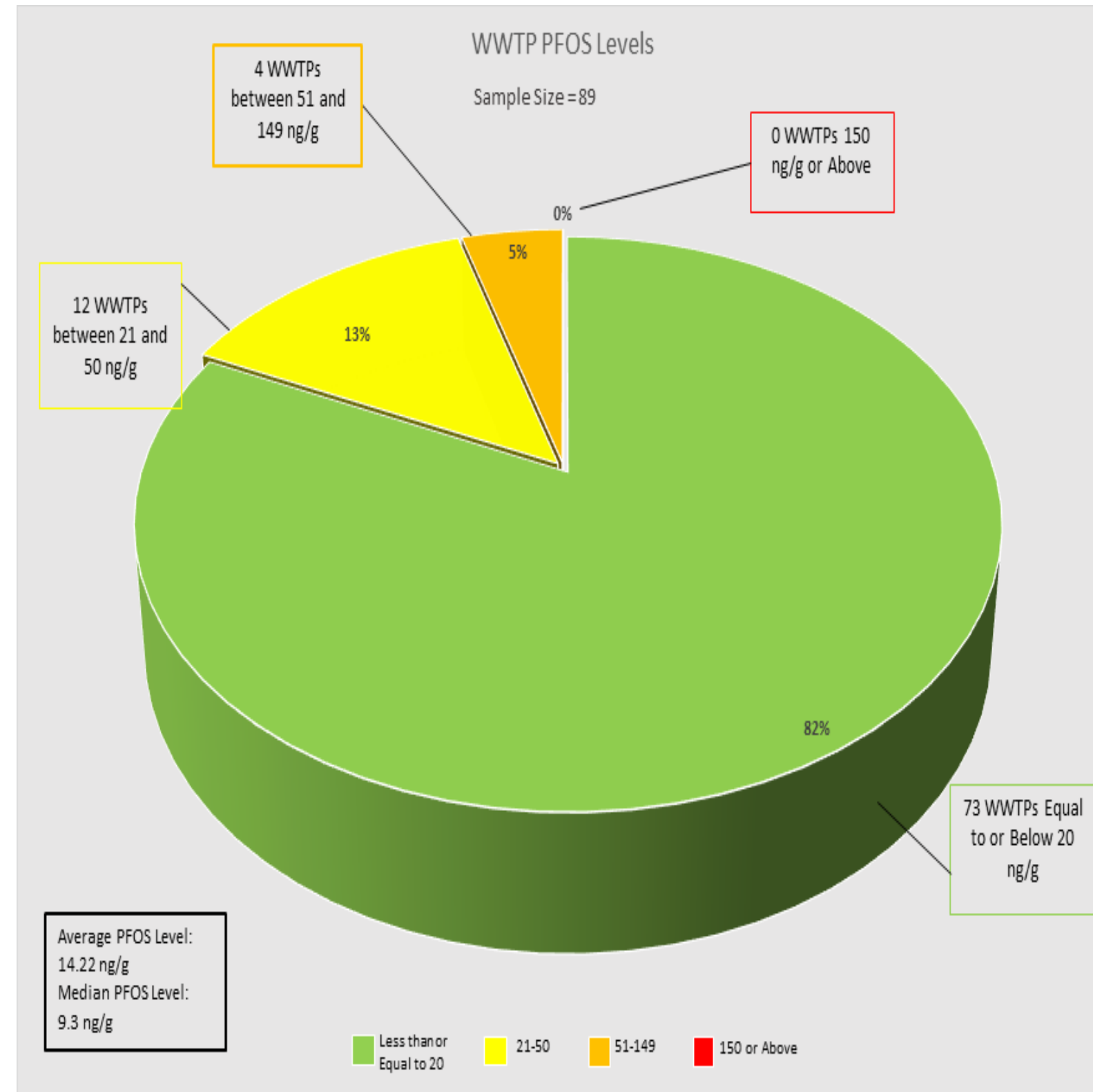
- *Immediately notify EGLE, WRD Staff.*
- *Sample effluent and investigate /develop source reduction program. Non –majors collect yearly biosolids sample*
- *Reduced application rates to 1.5 dry tons acre (or alternative risk mitigation strategy).*

## **PFOS below 50 µg/kg.**

- *If results are over 20 µg/kg PFOS - Consider investigating sources and sampling effluent for PFAS. Guidance can be obtained from the WRD IPP PFAS staff .*

# Biosolids Strategy - Preliminary wwtp sampling results

\* As of 8/18/21





# Strategy Components - Land Application of Biosolids Containing PFAS

**Communication / Transparency -  
Dialogue between WWTPS /  
Contractors with landowners /farmers  
on PFAS in biosolids**

*Prior to application, analytical results of PFOS and additional PFAS in biosolids information will be shared with landowners and/or farmers.*

- *Provide State Contacts for PFAS in Biosolids Map (EGLE and MDARD Biosolids Staff).*
- *Provide a link to Landowner /Farmer PFAS Resources webpage within the MPART Land Application Writeup*

# Landowner / Farmer Template Letter

Date: [ ]

Farmer Name / Landowner Name: [ ]

Address: [ ]

Subject: Biosolids Application Notification

[Please add generator name] is preparing to apply biosolids on land you own and/or farm. Recently there has been a lot of information in the news about Per- and polyfluoroalkyl substances (PFAS) in our environment. The intent of this letter is to provide a brief update on what is being done to control these substances in biosolids, our recent biosolids sample results, and where additional information can be obtained.

PFAS are a large group of chemicals used for decades in some industrial, commercial, and domestic settings and are found worldwide. Typical materials or processes that use or contain PFAS include firefighting foam, chrome plating, cookware coatings, waterproofing on clothing and carpet, and even food wrappers. Some PFAS, including Perfluorooctanesulfonic acid (PFOS), which is commonly found in biosolids, have been phased out of production in the United States and are no longer approved for use. Even though they have not been used for years, their legacy remains.

Wastewater Treatment Plants (WWTPs) do not generate PFAS chemicals, though they may receive discharges from certain industrial or commercial sources who have used PFAS. As a result, PFAS may be found in treated wastewater and biosolids. Some of those PFAS are known to travel through water, can linger in the environment, and have the potential to impact the soil, water, and crops. PFAS has been found to build up in the tissue of fish and deer in Michigan and in some areas led to consumption advisories. Studies are underway to determine the impact of PFAS on animals, animal products, and crops.

Currently, the United States Environmental Protection Agency is conducting a risk-based evaluation of PFAS in biosolids. Until that is completed, Michigan's Department of Environment, Great Lakes, and Energy (EGLE), Water Resources Division (which regulates the land application of biosolids) has developed a strategy working with WWTPs to implement an approach, focusing on identifying and reducing significant sources of PFAS entering a WWTP and preventing industrially impacted biosolids from being land applied. As a result of these efforts, several WWTPs have already seen significant reductions of PFAS concentrations in their biosolids.

Should you have additional questions concerning Michigan's strategy to monitor and reduce sources of PFAS in biosolids, please do not hesitate to reach out to one of the EGLE Biosolids staff or the Michigan Department of Agriculture and Rural Development (MDARD) contact provided on the on the attached page. More information about the work being done on PFAS in biosolids in Michigan can be obtained by visiting the Landowner/Farmer PFAS section of the PFAS Land Application Workgroup Web page: [Michigan.gov/PFASLandApplication](https://Michigan.gov/PFASLandApplication).

Our most recent PFOS testing result is: **Result number** [ ] **ppb** Date: [ ]  
Presently EGLE's threshold concentration for PFOS in biosolids to be considered industrially impacted is 150 ppb.

Enclosure: Statewide Biosolids and PFAS Contacts Map

# Landowner / Farmer Quick Facts Doc Collaborative effort with MWEA

## Biosolids and PFAS: Quick Facts for Landowners/Farmers

**What are Biosolids?** Biosolids are the treated materials produced during the processing of wastewater at a wastewater treatment plant (WWTP) (also known as a water resource recovery facility). Biosolids are rich in nutrients and organic matter and may be used as fertilizer or soil amendments (a beneficial use). A biosolids' quality and their proper use are regulated by the Michigan Department of Environment, Great Lakes, and Energy (EGLE) and the U.S. Environmental Protection Agency (USEPA). The Michigan Department of Environment, Great Lakes, and Energy (EGLE) and the USEPA require biosolids to undergo a treatment process and be tested for certain pollutants to protect human health and the environment. Those processes refine the biosolids so that they can be applied at agronomic rates, providing a stable and valuable source of plant nutrients and soil structural enhancements.



**What are PFAS and how do they get in wastewater?** Per- and Polyfluoroalkyl substances (PFAS) are a large group of chemicals used for decades in industrial, commercial, and domestic settings and are found worldwide. Typical materials or processes that use or contain PFAS include firefighting foam, chrome plating, cookware coatings, waterproofing on clothing and carpet, and even food wrappers. Some PFAS, including Perfluorooctane Sulfonate (PFOS), which are most commonly found in biosolids, have been phased out of production in the United States and are no longer approved for use. Even though they have not been used for years, their legacy remains.

WWTPs do not generate PFAS chemicals, though they may receive discharges from certain industrial or commercial sources who have used PFAS. As a result, PFAS may be found in treated wastewater and biosolids. Some of those PFAS are known to travel through water, can linger in the environment, and have the potential to impact the soil, water and crops. PFAS has been found to build up in the tissue of fish and deer in Michigan and in some areas led to consumption advisories. Studies by EGLE and USEPA are underway to determine the impact of PFAS on animals, animal products and crops. Some studies have shown that certain PFAS may harm human health, therefore, it is important to minimize exposure to all sources of PFAS in drinking water and food. For more information and referencing, please go to the website listed below.

The WWTP you are receiving biosolids from is:  
**(name)**  
You can reach the facility at:  
**(phone, web, and/or email)**  
Its most recent PFOS testing result is:  
**(xx) ppb on date**  
*Presently EGLE's threshold concentration for PFOS in biosolids to be considered industrially impacted is 150 ppb.*

**Michigan's response to reducing PFAS in biosolids.** Currently, USEPA is working to complete a risk-based evaluation of PFAS in biosolids. In the interim, EGLE's strategy is a deliberate, disciplined approach which focuses on identifying and reducing significant sources of PFAS entering WWTPs and preventing industrially impacted biosolids from being land applied. These efforts have helped WWTPs reduce PFAS concentrations in their biosolids.

In 2018, EGLE launched the Industrial Pretreatment Program (IPP) PFAS Initiative which has been successful in working with WWTPs to identify, reduce, and monitor sources of PFOS. Sixty-nine percent (69 percent) of the 95 WWTPs tested at the beginning of this initiative have already met water quality standards. Since the initial work in 2018, through aggressive source reduction efforts, the remaining facilities have continued their effective PFOS concentration reductions in treated wastewater by 49 to 99 percent compared to pre-2018 levels. For more information and referencing, please go to the website listed below.

Additionally, EGLE has established a protocol for WWTPs that may have biosolids impacted by PFAS industrial discharges. This includes a threshold concentration level (maximum of 150 parts per billion [ppb] for PFOS in biosolids) and monitoring requirements. Any WWTP that exceeds the threshold will not be allowed to land apply biosolids until they establish long-term measures for pre-treatment, eliminate their industrial sources of PFOS, and demonstrate that PFOS concentrations in their biosolids are consistently testing below the threshold concentration.



If you, your neighbors, or your customers have questions, you can find more information on PFAS in Biosolids by visiting the Michigan PFAS Action Response Team PFAS Land Application Workgroup web page [Michigan.gov/PFAS/land-application](https://www.michigan.gov/PFAS/land-application). You may also reach out to the staff people listed on the [Statewide Biosolids and PFAS Contact map](https://www.michigan.gov/documents/egle/egle-mdard-biosolids-pfas-staff_720327_7.pdf) located at the following web page [https://www.michigan.gov/documents/egle/egle-mdard-biosolids-pfas-staff\\_720327\\_7.pdf](https://www.michigan.gov/documents/egle/egle-mdard-biosolids-pfas-staff_720327_7.pdf)

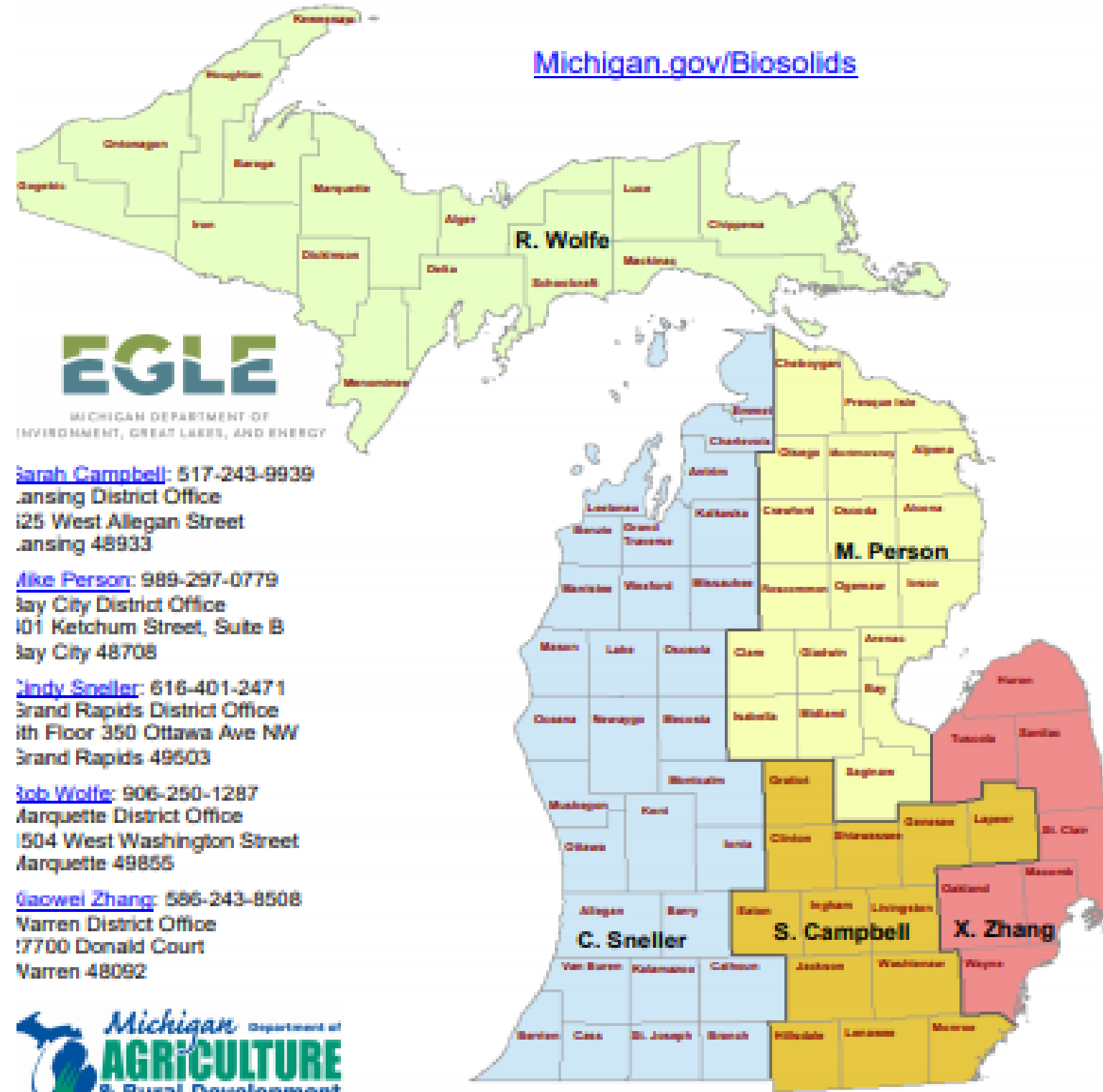




# State PFAS in Biosolids Contact Map

## PFAS in Biosolids State Contacts

[Michigan.gov/Biosolids](http://Michigan.gov/Biosolids)



**Jarah Campbell:** 517-243-9939  
Lansing District Office  
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3/25/2021

# MPART Land Application Workgroup Writeup

Michigan.gov  
Department of Environment, Great Lakes, and Energy  
**Michigan PFAS Action Response Team**  
HEALTH | DRINKING WATER | INVESTIGATIONS | TESTING | FISH AND WILDLIFE | PFAS FOAM | MPART

## Land Application Workgroup

### MISSION:

- Expand knowledge of PFAS and biosolids within wastewater collection and treatment systems to develop guidance to municipal Wastewater Treatment Plants (WWTPs), land application contractors, and farmers/landowners regarding land application of biosolids containing PFAS.
- Establish a durable process to evaluate biosolids land application sites.
- In conjunction with Industrial Pretreatment Program (IPP) Initiative efforts, reach equilibrium in program status that allows the majority of WWTPs to maintain the option to safely land apply biosolids. This is contingent on identifying and controlling sources within wastewater collection systems and on ability to develop guidance above.



This workgroup is led by the Department of Environment, Great Lakes, and Energy (EGLE) and consists of representatives from Michigan Department of Agriculture and Rural Development (MDARD) and Michigan Department of Health and Human Services (MDHHS).

### LANDOWNERS / FARMERS BIOSOLIDS

Recent Accomplishments | Next Steps | [What are Biosolids?](#) | [Research/Studies and Reports](#) | [Timeline of Accomplishments](#) | [Contact Information](#)

### WHAT ARE BIOSOLIDS?

Biosolids are the nutrient-rich organic materials resulting from the treatment of domestic sewage in a wastewater treatment plant (WWTP) ([visit our FAQ](#)). Biosolids contain essential plant nutrient and organic matter. When treated and processed, biosolids can be recycled and applied to crops as fertilizer to improve and maintain productive soils and stimulate plant growth. For more information on biosolids, go to EGLE's Water Resources Division (WRD) Biosolids Program Web Page: [Michigan.gov/Biosolids](#).



In Michigan, biosolids are beneficially used under requirements set forth in Michigan's Part 24 Administrative Rules, Land Application of Biosolids, promulgated under Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended; and the federal requirements contained in Title 40 of the Code of Federal Regulations, Part 503, Standards for the Use or Disposal of Sewage Sludge. Under these laws, biosolids must meet strict standards, including how much metal they contain, and where and how they can be applied to land.

In contrast, sludge from WWTPs that does not need to meet these quality standards is typically disposed in a landfill or incinerated. Sludges from industrial processes and residential septic systems are not considered "biosolids" but under certain circumstances these wastes can be applied to land.

Beneficial use of biosolids as fertilizer is a forward-thinking practice recommended in the [Michigan 21st Century Infrastructure Commission Final Report](#).

For more information on PFAS and biosolids see [MPART's Frequently Asked Questions document](#).

### RECENT ACCOMPLISHMENTS:

After the Lapeer WWTP was found to be a significant source of PFAS contamination to the [Flint River](#), tests revealed that Lapeer's sludge contained high levels of PFOS. In response, EGLE prohibited the sludge from being spread on land. MPART hired AECOM Technical Services Inc. to investigate PFAS issues related to Lapeer's Biosolids in late 2017/early 2018.

Reports from the Lapeer Biosolids PFAS Investigation were finalized and posted on the MPART website in late 2018. Following this investigation and the [Michigan IPP PFAS Initiative](#), the Biosolids Workgroup conducted a review of available research to better understand how common PFAS might be in biosolids.

Following are highlights of the Biosolids Workgroup efforts over the past year:

The Biosolids Workgroup expanded the Lapeer Biosolids PFAS Investigation to a statewide

[Michigan.gov/PFASLandApplication](https://Michigan.gov/PFASLandApplication)

*or search*

## MPART Land Application Workgroup

# Landowner / Farmer PFAs in Biosolids Web Page

Linked to at :

[Michigan.gov/PFASLandApplication](https://Michigan.gov/PFASLandApplication)

*or search*

- MPART Land Application Workgroup

## Landowners / Farmers Biosolids

**What are Biosolids?** Biosolids are the treated materials produced during the processing of wastewater at a wastewater treatment plant (WWTP) (also known as a water resource recovery facility). Biosolids are rich in nutrients and organic matter and may be used as fertilizer or soil amendments (a beneficial use). A biosolids' quality and their proper use are regulated by the Michigan Department of Environment, Great Lakes, and Energy (EGLE) and the U.S. Environmental Protection Agency (USEPA). The Michigan Department of Environment, Great Lakes, and Energy (EGLE) and the USEPA require biosolids to undergo a treatment process and be tested for certain pollutants to protect human health and the environment. Those processes refine the biosolids so that they can be applied at agronomic rates, providing a stable and valuable source of plant nutrients and soil structural enhancements.

### Additional Resources:

[State Biosolids and PFAS Contact Map](#)  
[MPART Human Health Workgroup](#)  
[MPART Animal Health and Food Safety Workgroup](#)  
[MPART FAQs](#)  
[EGLE Biosolids Program](#)  
[MDARD Biosolids Program](#)  
[USEPA Biosolids](#)

**What are PFAS and how do they get in wastewater?** Per- and Polyfluoroalkyl substances (PFAS) are a large group of chemicals used for decades in industrial, commercial, and domestic settings and are found worldwide. Typical materials or processes that use or contain PFAS include firefighting foam, chrome plating, cookware coatings, waterproofing on clothing and carpet, and even food wrappers. Some PFAS, including Perfluorooctane Sulfonate (PFOS), which are most commonly found in biosolids, have been phased out of production in the United States and are no longer approved for use. Even though they have not been used for years, their legacy remains.

WWTPs do not generate PFAS chemicals, though they may receive discharges from certain industrial or commercial sources who have used PFAS. As a result, PFAS may be found in treated wastewater and biosolids. Some of those PFAS are known to travel through water, can linger in the environment, and have the potential to impact the soil, water, and crops.

PFAS has been found to build up in the tissue of fish and deer in Michigan and in some areas led to consumption advisories. Studies by EGLE and USEPA are underway to determine the impact of PFAS on animals, animal products and crops. Some studies have shown that certain PFAS may harm human health, therefore, it is important to minimize exposure to all sources of PFAS in drinking water and food. For more information and referencing, please go to the website (or link) listed below.



**Michigan's response to reducing PFAS in biosolids.** Currently, USEPA is working to complete a risk-based evaluation of PFAS in biosolids. In the interim, EGLE's strategy is a deliberative, disciplined approach which focuses on identifying and reducing significant sources of PFAS entering WWTPs and preventing industrially impacted biosolids from being land applied. These efforts have helped WWTPs reduce PFAS concentrations in their biosolids.



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## Michigan Biosolids PFAS-related information and links

In early 2018, EGLE’s Water Resources Division (WRD) developed the Industrial Pretreatment Program (IPP) PFAS Initiative Study of 95 municipal Wastewater Treatment Plants (WWTPs) to help identify and systematically reduce and eliminate sources of PFAS (PFOS/PFOA) entering wastewater collection systems. During this study, some WWTPs were found to have elevated PFAS in their effluent and associated residuals (sludge/biosolids). Through this study, WRD identified 6 WWTPs with industrially impacted biosolids. WRD temporarily restricted their land application program until elevated sources of the PFOS were eliminated and residual PFOS concentrations were decreased.

Expanding upon the information collected during the IPP PFAS Initiative, in the fall of 2018, WRD launched a study to evaluate the presence of PFAS in Municipal Wastewater and Associated Residuals. Through this study, 42 municipal WWTPs were sampled to evaluate the presence of PFAS in influent, effluent, and residuals. As part of this initiative, 29 land application sites (associated with 10 municipal WWTPs) were evaluated to further understand the potential impact land-applied biosolids has on the environment. AECOM Technical Services, Inc. (a consulting firm) was contracted by WRD to perform all the sampling in this study. All samples were analyzed for 24 PFAS compounds.

For a summary of the study and initial findings of the IPP PFAS Initiative, see the [Summary Report: PFAS in Municipal Wastewater and Associated Residuals \(Sludge/Biosolids\)](#). For the complete detailed report covering the IPP PFAS Initiative and the Statewide Study of 42 municipal WWTPs, see [Evaluation of PFAS in Influent, Effluent, and Residuals of Wastewater Treatment Plants \(WWTPs\) in Michigan](#).

For a summary of the land application site screening results, see [Statewide Wastewater Treatment Plant and Biosolids PFAS Study: Field Reports Summary](#). See the below attachments for detailed field reports covering the screening results for individual land application sites.

- [Attachment A – Delhi Twp. WWTP Field Report](#)
- [Attachment B – Gaylord, Jackson, Midland, and SHVUA WWTPs Field Report](#)
- [Attachment C – Port Huron WWTP \(Fort Gratiot\) Field Report](#)
- [Attachment D – Bronson WWTP Field Report](#)
- [Attachment E – Ionia WWTP Field Report](#)
- [Attachment F – Wixom WWTP Field Report](#)
- [Attachment G – Lapeer WWTP Field Report](#)

### Interim Strategy – Land Application of Biosolids Containing PFAS (2021)

EGLE is implementing the following interim strategy/requirements to guide WWTPs and landowners/farmers who make decisions on land applying biosolids with detectable concentrations of PFAS. The following documents describe this strategy and requirements:

- [Interim Strategy – Land Application of Biosolids Containing PFAS \(2021\)](#)
- [RMP Notification Letter - NPDES \(2021\)](#)
- [RMP Notification Letter – Groundwater \(2021\)](#)
- [Landowner/Farmer Notification Template Letter](#)
- [Statewide Biosolids and PFAS Contacts Map](#)

Additional Biosolids and PFAS information can be located at the following links.

- [Biosolids PFAS FAQs](#)



## Biosolids Sampling /Analysis Considerations

- Methods of Analysis
- Sample Collection
- QA/QC



## BIOSOLIDS AND SLUDGE PFAS SAMPLING

### Guidance

#### Introduction

This guidance document contains the processes, decontamination procedures, and acceptable materials for sampling biosolids and sludge for Per- and Polyfluoroalkyl Substances (PFAS). In addition, this guidance will be used to support the sampling objectives and procedures based on the Quality Assurance Project Plan (QAPP) developed prior to sampling activities.

**NOTE:** Sections 1-4 of the **General PFAS Sampling Guidance** should be reviewed prior to reviewing this guidance document.

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) intends to update the information contained within this PFAS sampling guidance document as new information becomes available. Users of this guidance are encouraged to visit the Michigan PFAS Response website ([Michigan.gov/PFASResponse](https://Michigan.gov/PFASResponse)) to access the current version of this document.

In Michigan, the term "biosolids" is commonly used to describe the residuals created in a Wastewater Treatment Plant (WWTP) and land applied in accordance with the Part 24 Rules, Land Application of Biosolids, promulgated pursuant to Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. The term "sludge" is typically used to describe the solids that have been disposed through methods other than land application.

Any Michigan WWTP that land applies biosolids in Michigan must have an approved Residuals Management Program that includes a sampling plan describing the methodology representative of the biosolids samples to be collected. The individual responsible for overseeing the collection of the biosolids for PFAS sampling should use this guidance document in conjunction with their facility's approved Residuals Management Program to obtain a representative biosolids sample. Special considerations should be followed as described in the project QAPP based on project objectives.

Wastewater flows through two treatment processes at a WWTP, a liquid stream and a solid stream. The liquid stream is treated by primary and secondary treatment processes at a minimum and sometimes with a tertiary treatment process. Sampling for the liquid stream of the wastewater is covered in EGLE's Wastewater PFAS Sampling Guidance. This sampling guidance will address the analysis of biosolids and sludge, the solids portion of the wastewater that is treated through the solid stream. The solids content of the sludge from the primary, secondary, and possibly tertiary treatment is highly aqueous and is sometimes thickened/dewatered prior to storage for eventual land application or landfilling. Biosolids and sludge samples can be obtained from many points along the WWTP solids stream.

Additional information about Michigan's Biosolids Program, including program staff map, is available at: [Michigan.gov/Biosolids](https://Michigan.gov/Biosolids).

# Biosolids/Sludge Sampling Guidance



Michigan Department of  
**Environment, Great Lakes, and Energy**

800-662-9278  
Michigan.gov/EGLE



Questions ?

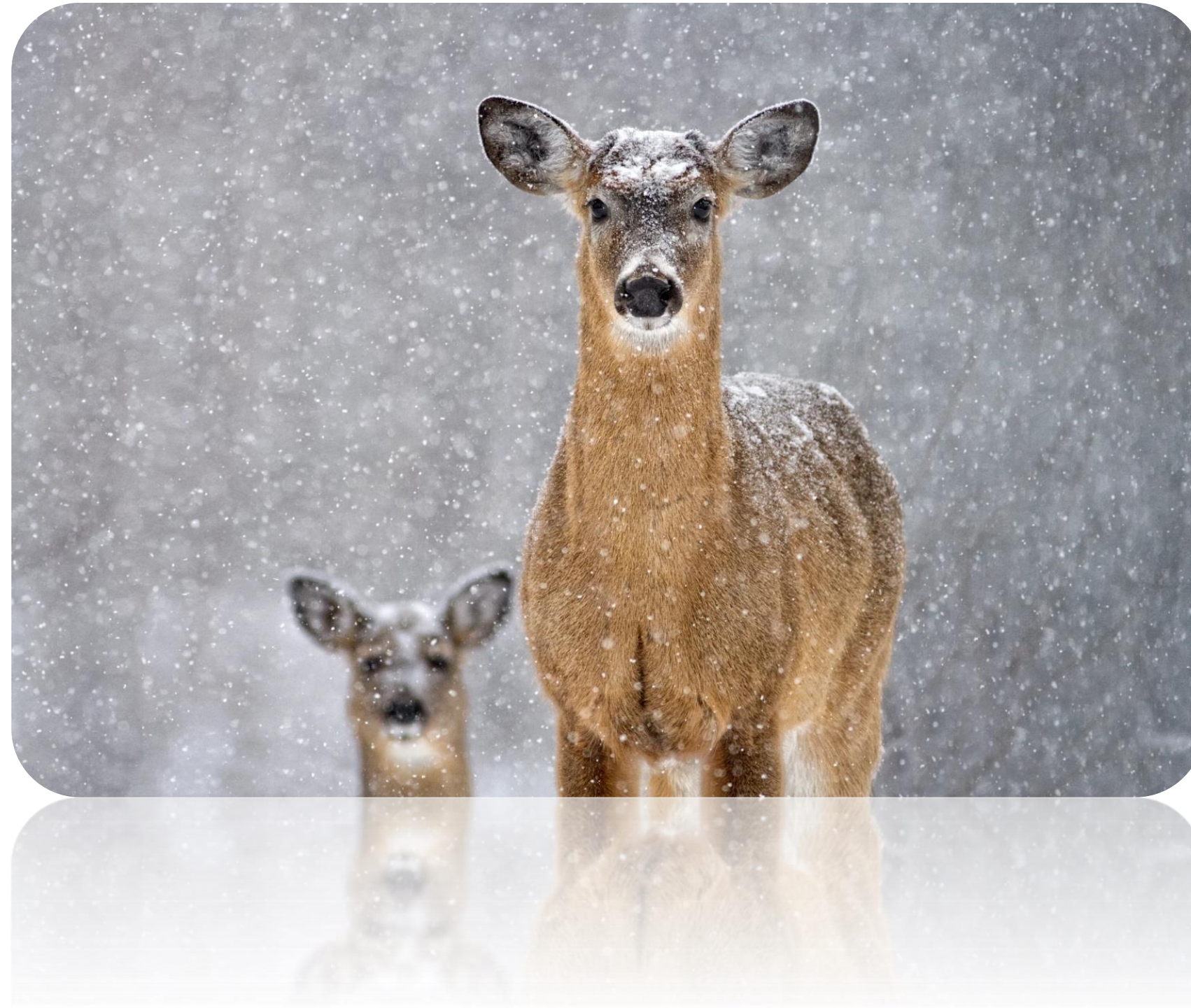
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# General Questions



# Wrap-up and Next Steps





# CONNECT WITH US

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<https://dnr.wisconsin.gov/topic/PFAS>

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