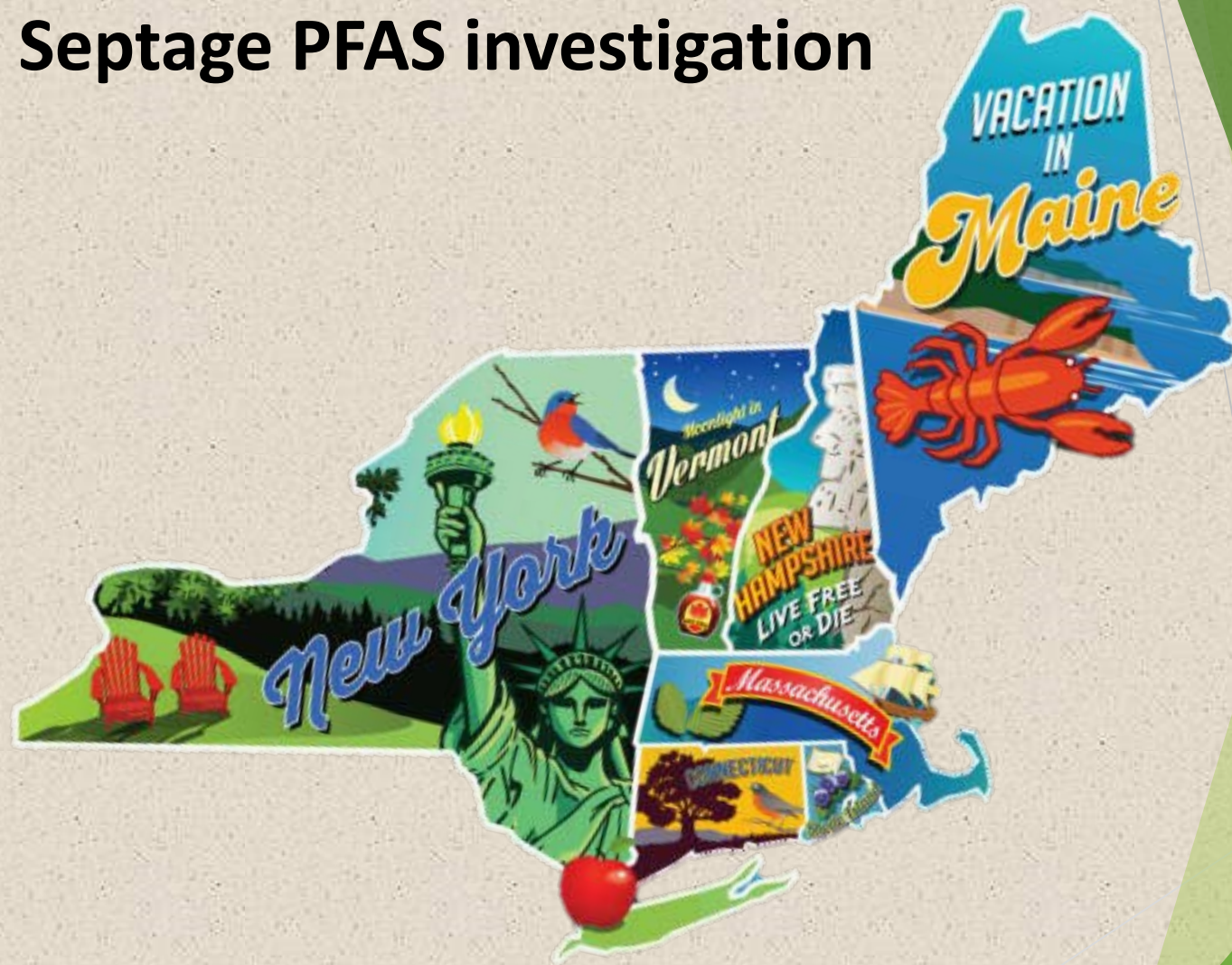


NEWMOA : Science in PFAS

NHDES Sludge and Septage PFAS investigation

2017 - present



Anthony F. Drouin

Administrator- Residuals Management Section

Water Division – Wastewater Engineering Bureau (NHDES)

April 5th, 2022

- ▶ Who is in RMS today?
- ▶ NH Residuals Waste Cycle – Sludge, Leachate, Septage
- ▶ PFAS Collection System Sampling
- ▶ PFAS Biosolids Sampling
- ▶ Other Notable PFAS Residuals Sampling
- ▶ USGS PFAS Sludge and Soil Leaching Study
- ▶ Northeast Biosolids Improvement Program

Residuals Management Section

NHDES

- ▶ Water Division
 - ▶ Wastewater Engineering Bureau
 - ▶ Residuals Management Section

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Engineer**
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Wade Pelham
**Sludge & Septage
Coordinator**
*Training and
Outreach*

Jim Talvy
Inspector
*Sludge & Septage
Hauler Permitting*

2018 NH Sludge, Septage, and Leachate

- NH Biosolids Recycled to Land Application : **~40,000 wet tons**
- NH Sludge that was disposed at a landfill : **~50,000 wet tons**
- NH Sludge that was incinerated : **~17,500 wet tons**

*Sludge managed to lagoon not accounted for

**NH WWTF, no paper mill sludge accounted for

- Over **100,000,000 gallons** of septage was managed in NH
- 6 Operating lined landfills in NH : **~100,000,000 gallons** of leachate
 - ~80,000,000 gallons** managed at WWTFs within state
 - ~20,000,000 gallons** managed at WWTFs out of state

NHDES RMS Collection Systems

Sampling Effort

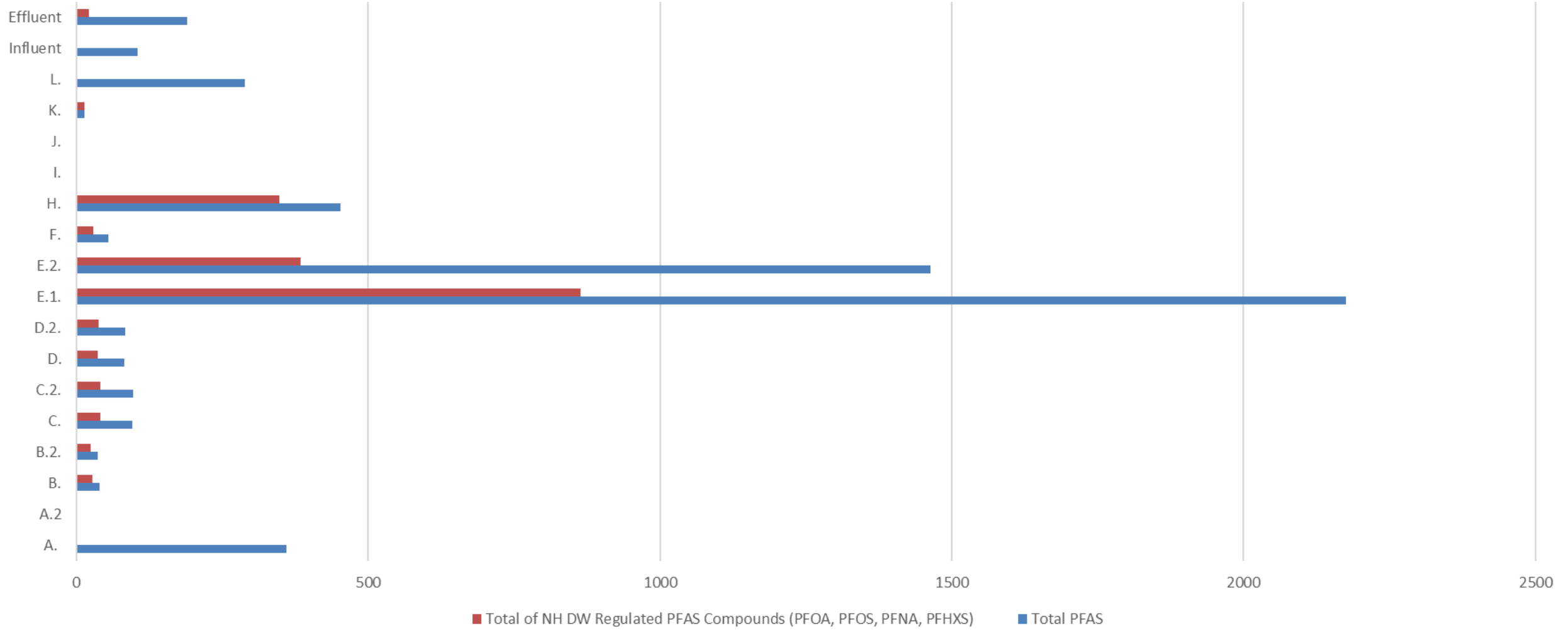




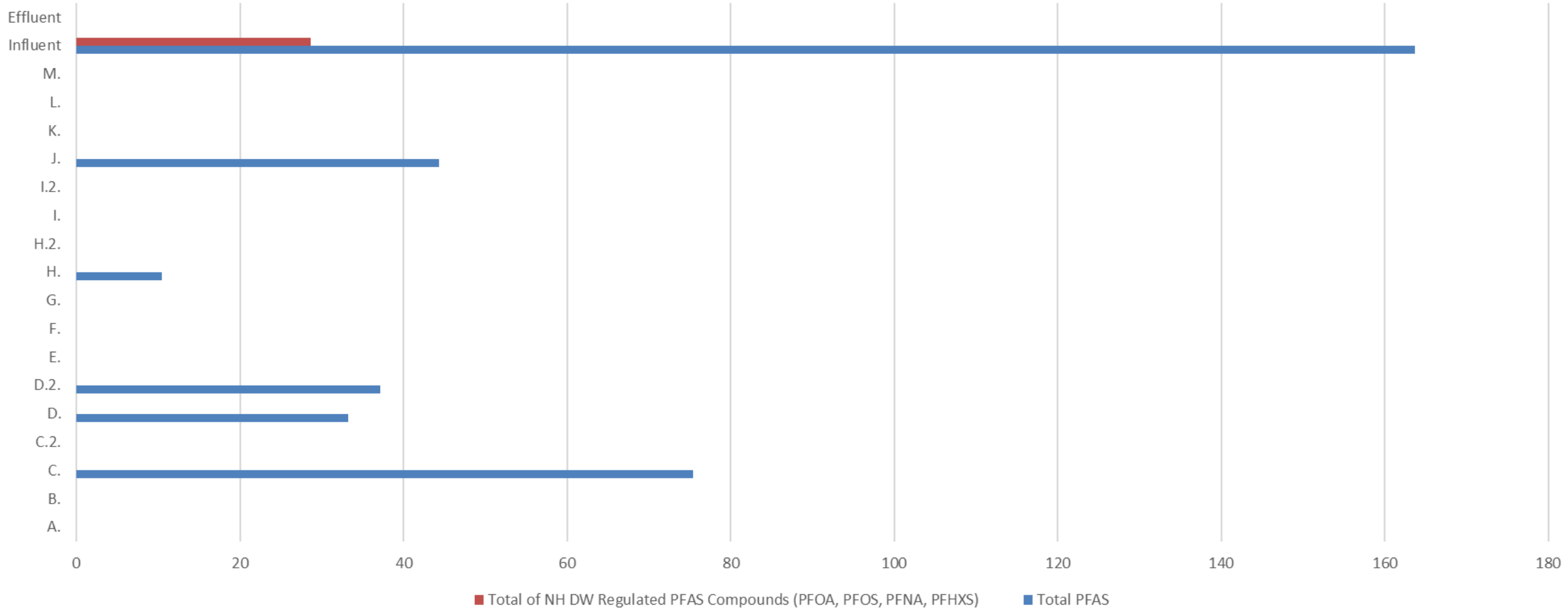


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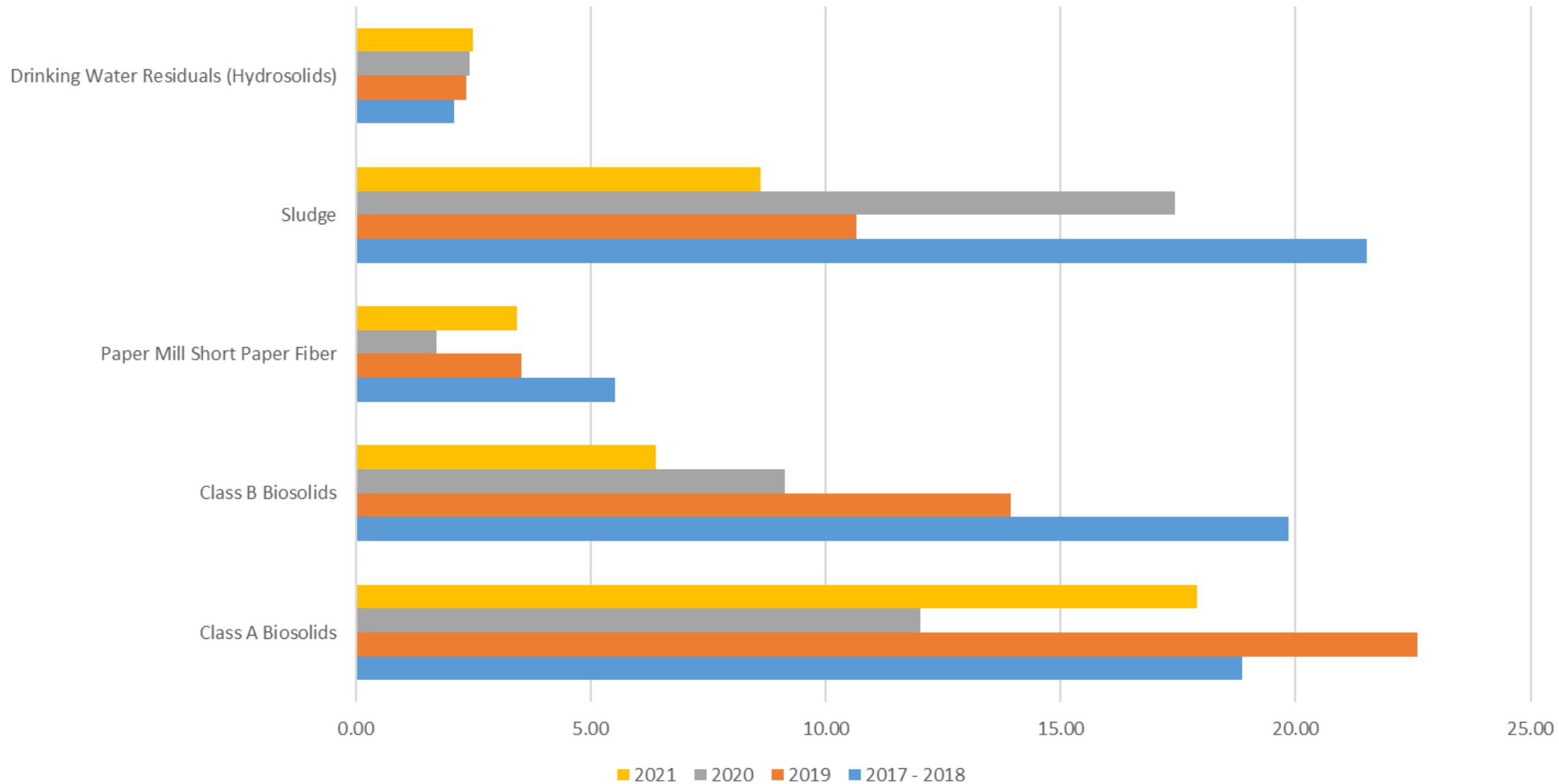
Industrially Impacted Southern NH Community Collection System PFAS (ng/l)



Non-Industrially Impacted Central NH Community Collection System PFAS (ng/l)

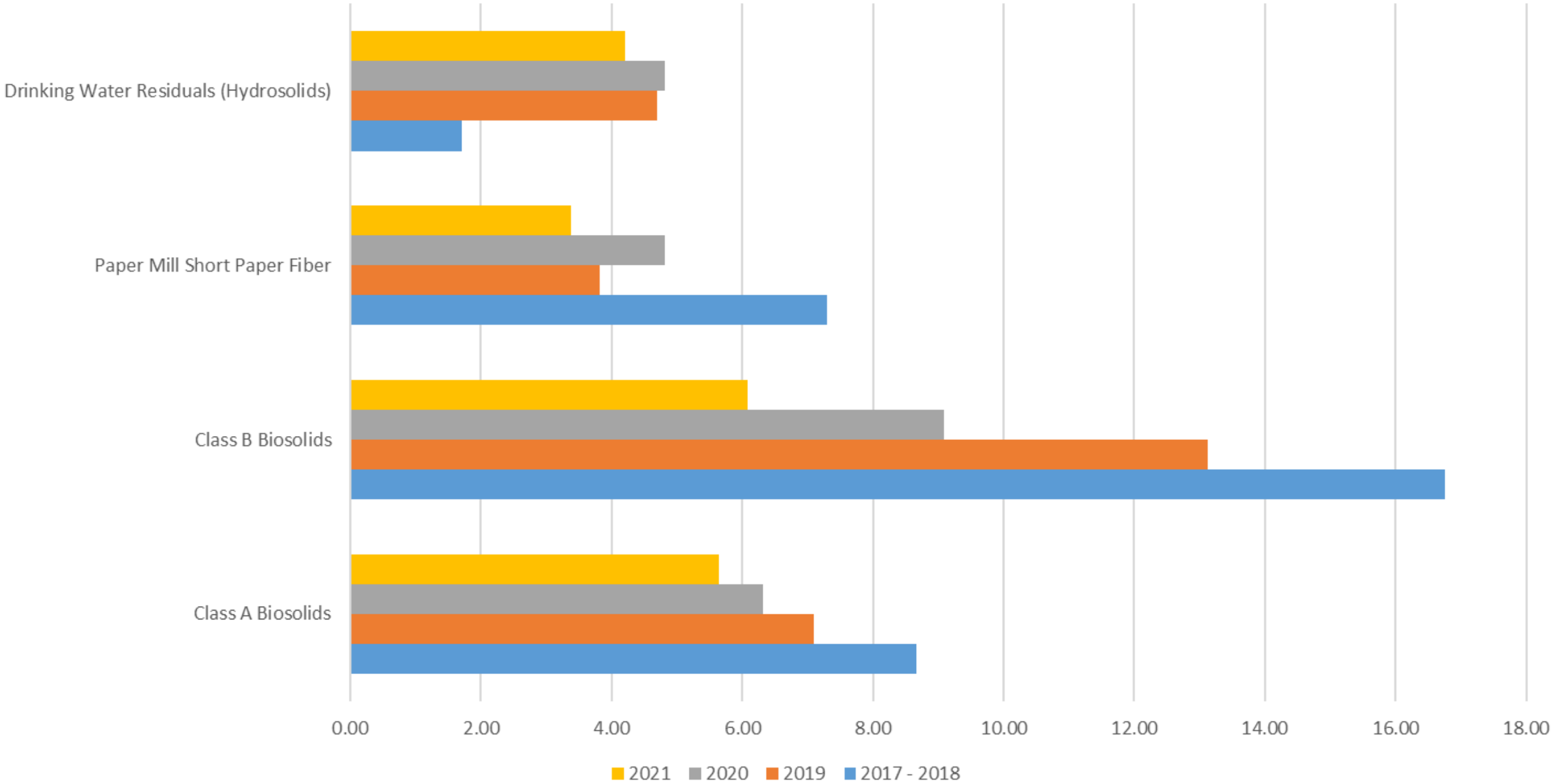


NH SQC 2017 - 2021 PFAS Residuals Investigation (ng/g) (sum of PFOA, PFOS, PFHxS, & PFNA)

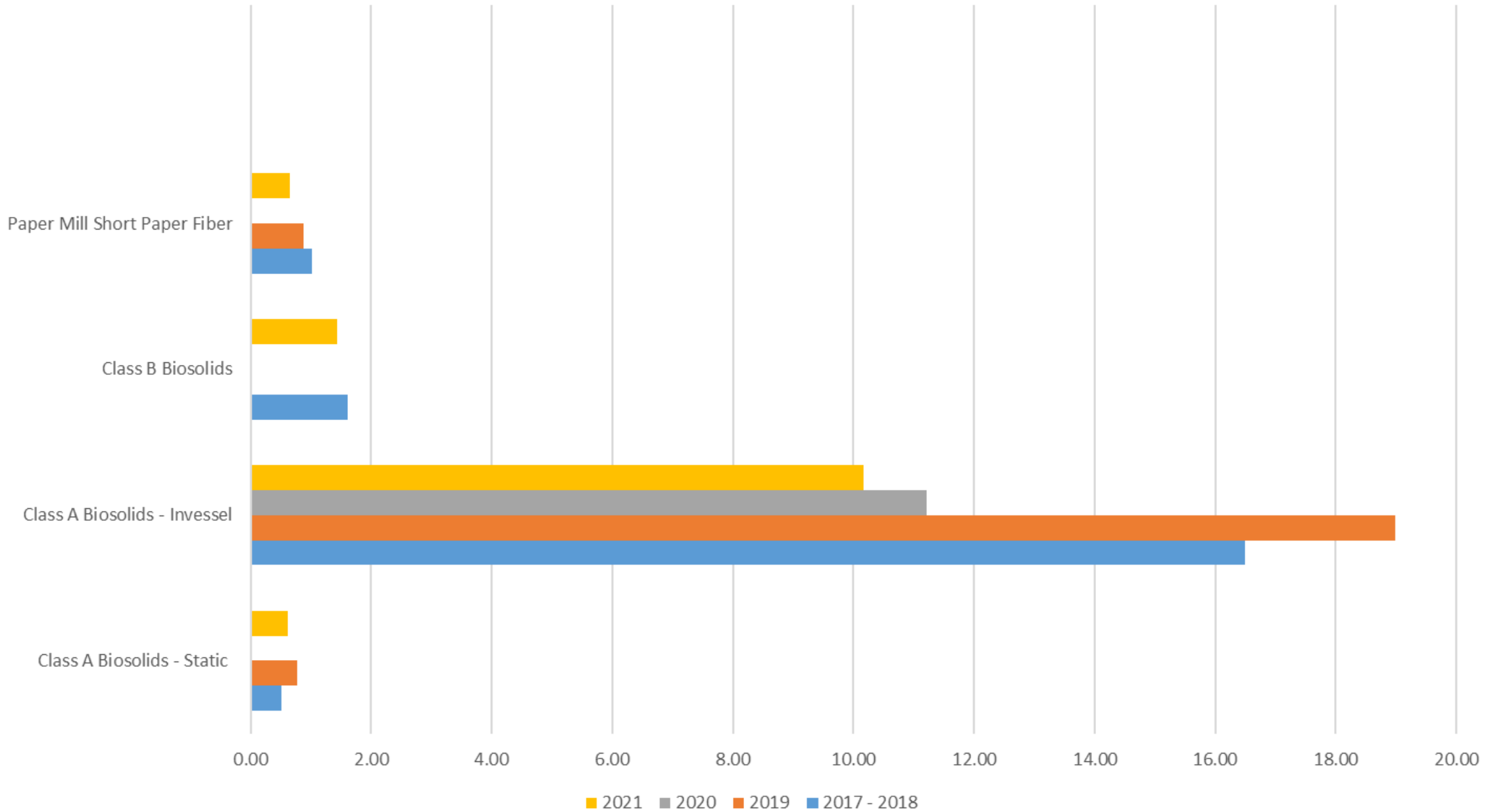


Samples analyzed for PFAS were analyzed using isotope dilution. Some compounds from sample reports' QA/QC report were flagged for being outside of percent recovery acceptable criteria.

NH SQC 2017 - 2021 PFOS Residuals Investigation (ng/g)



NH SQC 2017 - 2021 PFOA Residuals Investigation (ng/g)



Other Notable PFAS Sampling Events

- ▶ Rural NH community Septage Lagoon Solids sampled in 2020
 - ▶ Total PFAS (24 compounds) - **222.8 ng /g**
 - ▶ Total of NH DW Regulated Compounds (PFOS, PFOA, PFNA, PFHxS) - **86.6 ng /g**
- ▶ Compostable Toilet Compost sampled in 2021
 - ▶ Total PFAS (24 compounds) - **13.3 ng /g**
 - ▶ Total of NH DW Regulated Compounds (PFOS, PFOA, PFNA, PFHxS) - **9.6 ng /g**
- ▶ Elementary School Septic Tank Septage sampled in 2021
 - ▶ Total PFAS (24 compounds) - **59.6 ng /g (bottom) / 421.4 ng /g (top)**
 - ▶ Total of NH DW Regulated Compounds (PFOS, PFOA, PFNA, PFHxS)
 - ▶ **0.0 ng /g (bottom) 3.8 ng /g (top)**
- ▶ Aerated Lagoon Sludge Blanket sampled in 2020
 - ▶ Total PFAS (24 compounds) - **388.3 ng /g (lagoon 1) / 533.5 ng /g (lagoon 2)**
 - ▶ Total of NH DW Regulated Compounds (PFOS, PFOA, PFNA, PFHxS)
 - ▶ **0.0 ng (lagoon 1) /g / 31.6 ng /g (lagoon 2)**
 - ▶ Higher concentrations in precursors analyzed than terminal compounds
 - ▶ Equipment blanks were ND

USGS Soil / Sludge Leaching Study

- ▶ **Three phase study**
 - ▶ **NH soil background sampling (100 samples)**
 - ▶ **Batch Experiments on 5 major biosolids and PFAS contaminated NH soils**
 - ▶ **Field Investigation to prove accurate coefficients were developed**
- ▶ **Phase 1 : 100% complete – PFOS detected in all samples taken**
- ▶ **Phase 2: In Process**
- ▶ **Phase 3: Fall 2021**
- ▶ **Full Completion: October 2022 – pushed back from Spring 2022**
- ▶ **Rule revisions: 2023? – Newly proposed legislation**

NEBIP Brochures

PFAS in Wastewater

When you wash items that contain PFAS compounds some of the chemicals are drawn out of the item, be it clothing, dishware, or furniture, those chemicals ultimately end up in your wastewater and drain into the city sewers or into your own septic tank.

PFAS cannot break down in the environment, this makes them 'forever chemicals.' Once these chemicals enter our water supply or the environment it is very hard to get them out.

Even though wastewater treatment facilities are extremely effective at removing many pollutants, PFAS can enter a WWTF in several ways:

- Landfill Leachate
- Industry
- Residents

PFAS can be discharged into a river.

How does PFAS effect your local wastewater treatment facility and YOU?

Drafted by:
The Northeast Biosolids Improvement Program

Cool Picture!

What is "PFAS" & what does it do?

PFAS stands for "Per- and polyfluoroalkyl substances" and is a group of manmade chemicals that have been widely used since the 1940s.

PFAS is commonly used to make products that are heat, water, or oil resistant and are so useful they are found everywhere within our world!

BUT... There's a catch!

PFAS have been known by the EPA to be very harmful to wildlife and humans! They can negatively impact child development, cause reproductive harm, immunological problems, and have been linked to some cancers.

This is why we need to be careful, when buying new products, to make sure they are PFAS free. This can be very difficult since the chemicals are so popular! The reverse of this pamphlet contains a list of products to be on the lookout for that may contain PFAS chemicals and what you can do to help!

Products that may contain PFAS

Outdoor Apparel
Coated Paper
Personal Care Products
Food Packaging
Cleaning Agents
Paints / Coatings / Sealants
Nonstick Cookware
Stain resistant clothing, furnishing, & carpets

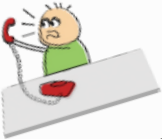
More Clipart

What can I do to help?

1. Read labels and research products to find PFAS-free replacements.
2. Check out www.nbscentral.org to help you understand PFAS in your world.
3. Talk to your local legislator or state's representative and ask for legislative action to stop the manufacturing of PFAS.

Including--

- What are PFAS chemicals?
- How PFAS effects wastewater and gets into our environment!
- A list of products that may contain PFAS!
- What you can do to limit PFAS usage!



What are Emerging Contaminants?

The EPA defines emerging contaminants to include: PFAS, Pharmaceuticals, Pesticides, Personal care products, Industrial solvents and chemicals, Explosives, and Gasoline additives.

Turning Sludge into Biosolids

Wastewater treatment facilities generate sludge from the operations at their plant. On the surface this sludge may seem useless, but the sludge can be recycled into a fertilizer known as biosolids. Biosolids are very useful and can be used to fertilize agricultural lands and public parks and gardens.

Why Conduct Septage Screenings?

In order to comply with incoming PFAS regulations, some wastewater facilities may set up testing programs to screen domestic and non-domestic septage coming into the plant for PFAS or the other emerging contaminants.

The septage hauler to be in receiving facility to check if it is PFAS free.

What is Domestic Septage?

Domestic septage is the liquid or solid material removed from a septic tank, cesspool, portable toilet, type III marine sanitation device, or a similar system that receives only household, non-commercial, or non-industrial wastes.

Household activities include the normal bathroom and kitchen activities done at home by the residents living in that household such as toilet use, residential dish and clothes washing, and showering.

What is Non-Domestic Septage?

Non-Domestic Septage is also known as commercial or industrial septage. It includes any waste generated by non-household activities that is discharged as wastewater into a septic tank, cesspool, portable toilet, or type III marine sanitation device.

Some examples of Non-Domestic Septage:

- A hair salon operating out of someone's home
- An auto mechanic's shop attached to the owner's home
- A school that uses industrial grade cleaning chemicals

"The factor that differentiates commercial and industrial septage from domestic septage is not the type of establishment generating waste, rather it is the type of waste being produced" (EPA).

Document Objective

Dealing with emerging contaminants is a challenge for wastewater disposal facilities, especially if they are producing solids or biosolids for beneficial use. Because of this, some wastewater treatment facilities are beginning to screen for PFAS and other emerging contaminants. These facilities know that this screening is necessary to ensure they provide a quality fertilizer or soil conditioner to their customers, and to maintain public acceptance of their materials.

This document is to help septage haulers and wastewater operators distinguish the difference between domestic and non-domestic septage, and to help familiarize these haulers and operators with the screening programs that may be in place to monitor for emerging contaminants.

Useful Links

NEBIA Sampling Guide:
<https://www.nbscentral.org/sites/default/files/2023-03/NEBIA%20Sampling%20Guide.pdf>

MaineWast WWTF Septage Permit Application:
<https://www.maine.gov/water/wwtf/septage/permit-application>

MSDS Checklist:
<https://www.maine.gov/water/wwtf/septage/msds-checklist>

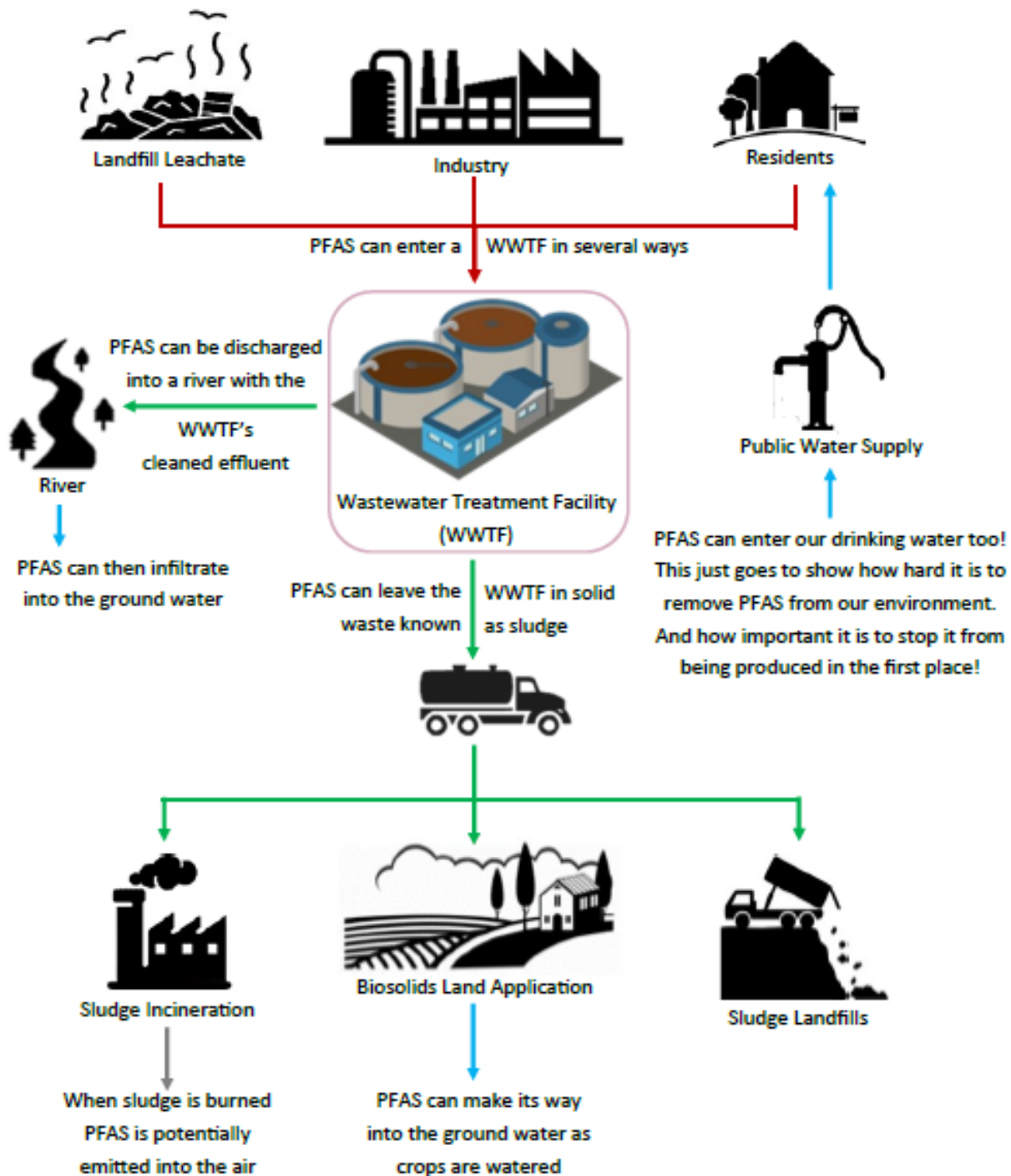
Wastewater Operator and Septage Hauler PFAS Guidance

Drafted by:
The Northeast Biosolids Improvement Program

Including--

- The importance of keeping PFAS out of our biosolids
- A list of Emerging Contaminants and their effects!
- What WWTF operators and septage haulers can do against these contaminants!





Thank you! Any Questions?

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