

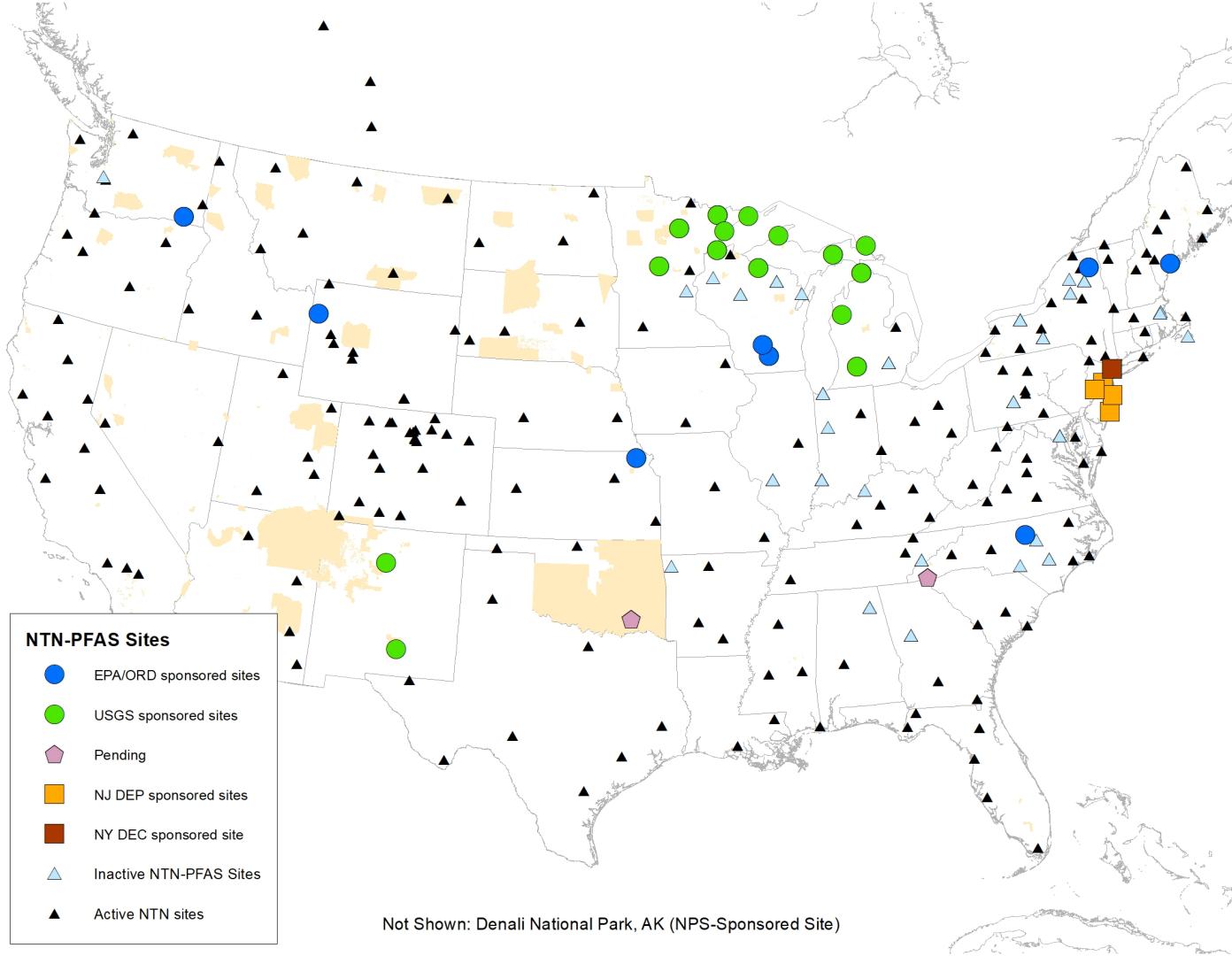


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Summaries of PFAS in Precipitation Sampling at Two NYS Monitoring Sites and Two NYS PFAS Air Deposition Source Investigations

Donald Ward Jr., Ph.D.
NYSDEC Division of Air Resources' Air Toxics Section
NEWMOA PFAS Seminar Series
December 5th, 2024 Presentation

Pilot PFAS- NTN Subnetwork (PFN) National Monitoring Station Locations



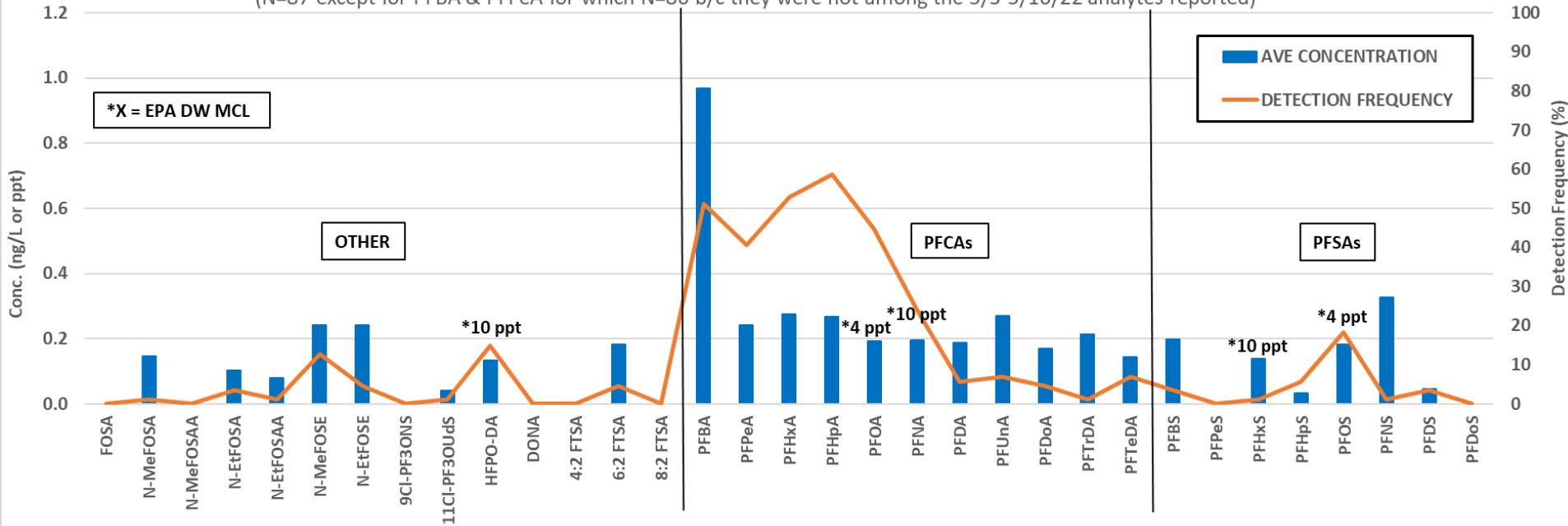
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Average and Maximum Precipitation PFAS Concentrations vs Detection Frequencies

WF Ave. Precip. PFAS Conc.s & Detects

Ave. Conc. of Detections & Detection Frequency of PFAS Analytes at Whiteface Mtn, NY from 9/1/20 to 12/27/22

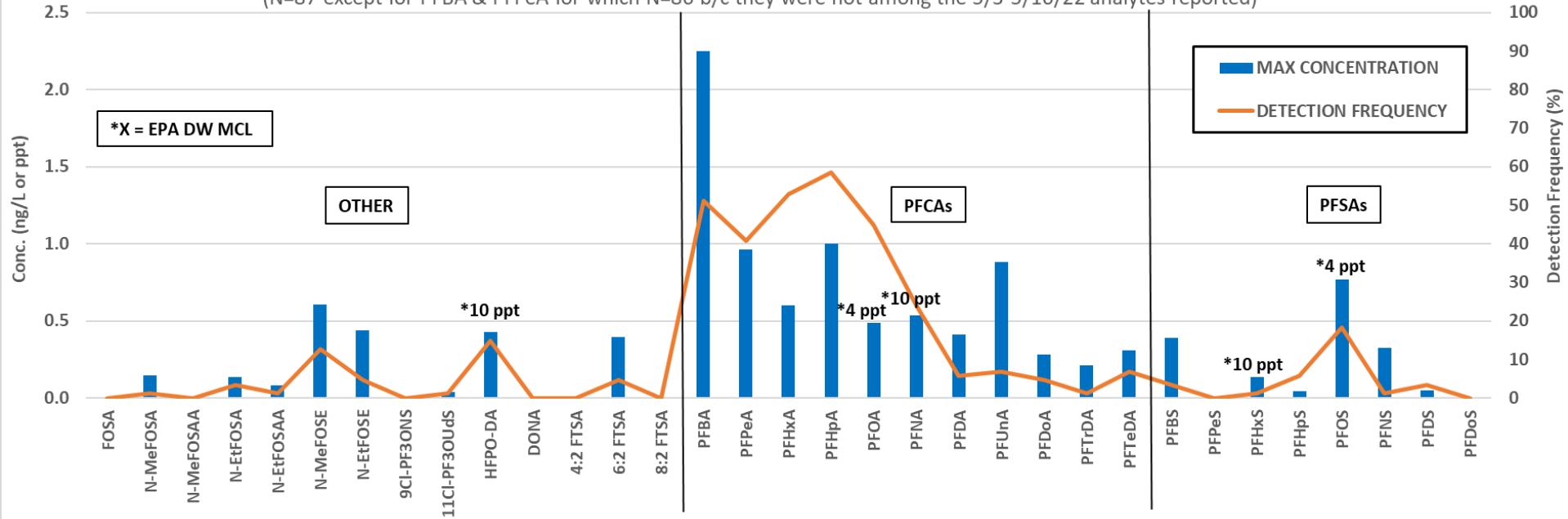
(N=87 except for PFBA & PFPeA for which N=86 b/c they were not among the 5/3-5/10/22 analytes reported)



WF Max. Precip. PFAS Conc.s & Detects

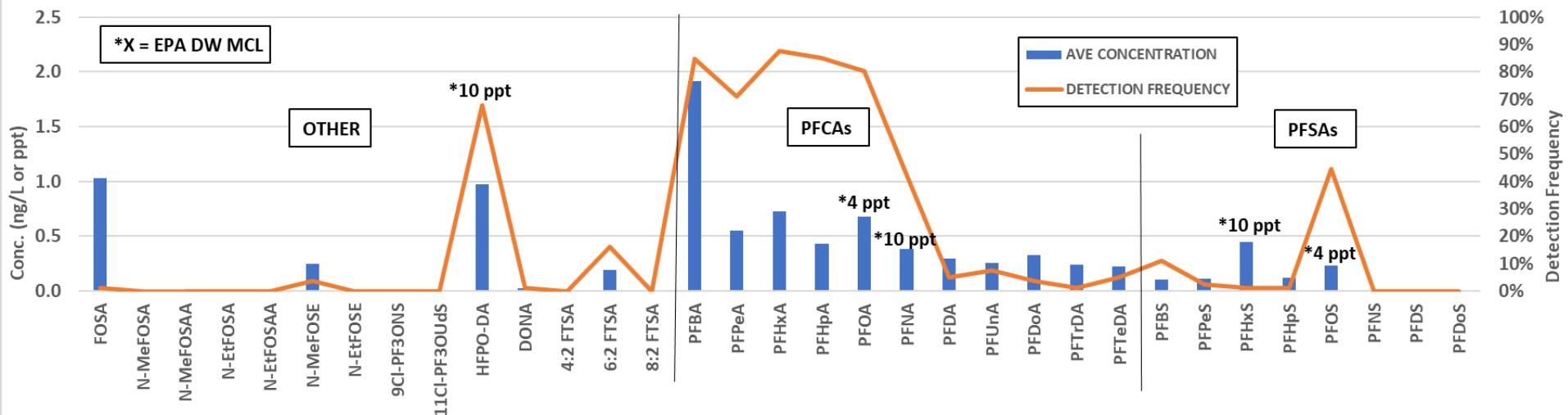
Max. Conc. of Detections & Detection Frequency of PFAS Analytes at Whiteface Mtn, NY from 9/1/20 to 12/27/22

(N=87 except for PFBA & PFPeA for which N=86 b/c they were not among the 5/3-5/10/22 analytes reported)



Bronx Ave. Precip. PFAS Conc.s & Detects

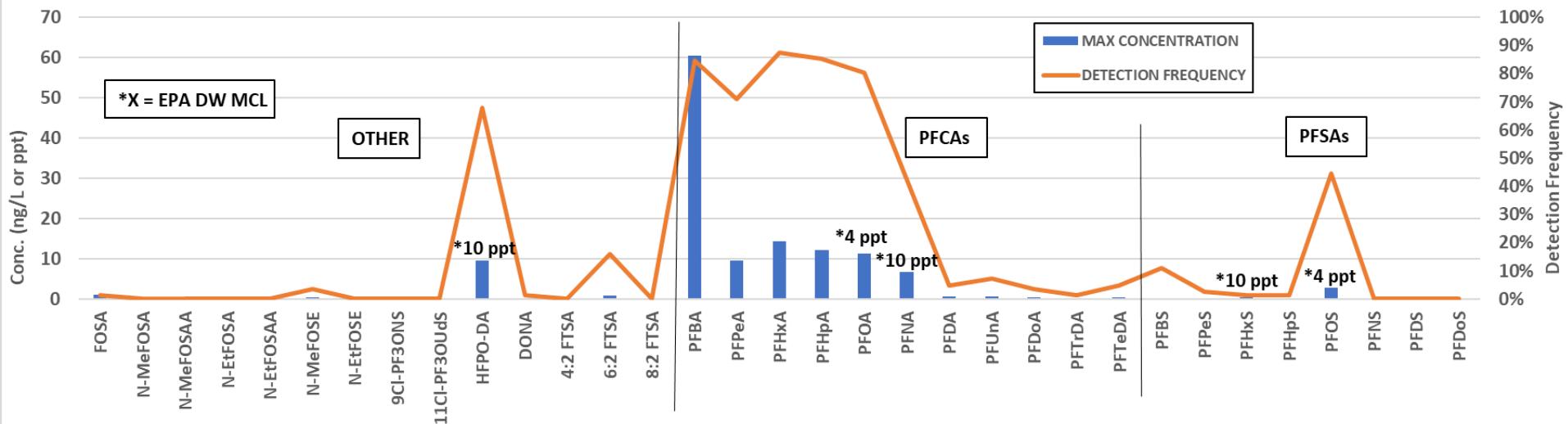
Average Concentration of Detections & Detection Frequency of PFAS Analytes in Bronx, NYC from 9/28/21 to 1/2/24
 (N=81 except for PFBA & PFPeA for which N=79 b/c they were not among the 6/21-6/28/22 & 8/2-8/23/22 analytes reported)



Bronx Max. Precip. PFAS Conc.s & Detects

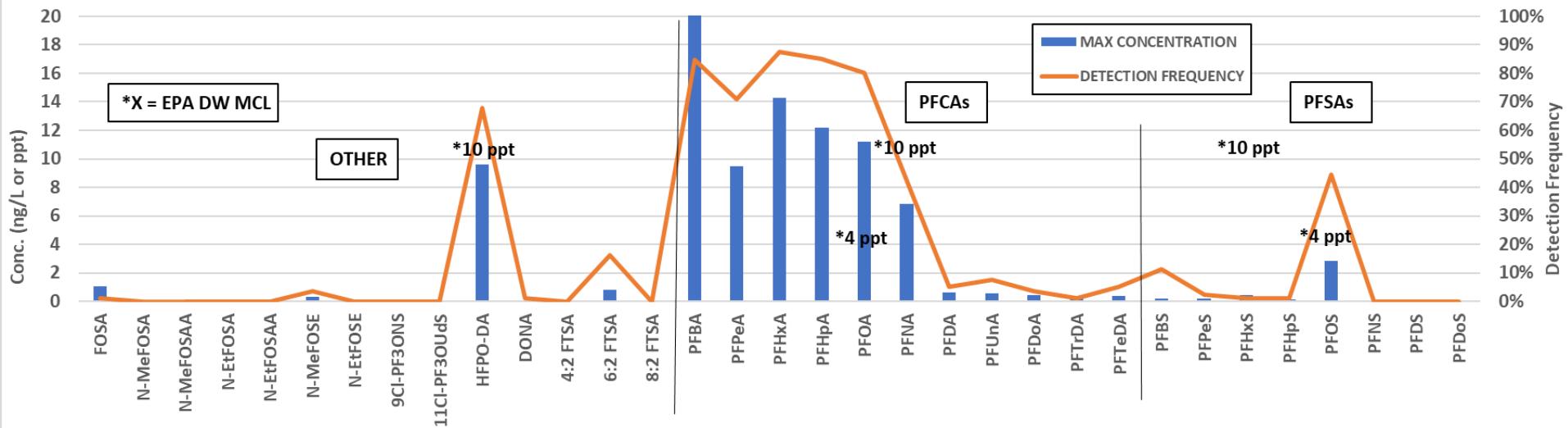
Maximum Concentration & Detection Frequency of PFAS Analytes in Bronx, NYC from 9/28/21 to 1/2/24

(N=81 except for PFBA & PFPeA for which N=79 b/c they were not among the 6/21-6/28/22 & 8/2-8/23/22 analytes reported)



Bronx Max. Precip. PFAS Conc.s & Detects (Reduced Scale)

Maximum Conc. & Detection Frequency of PFAS Analytes in Bronx, NYC from 9/28/21 to 1/2/24 (Reduced Scale)
 (N=81 except for PFBA & PFPeA for which N=79 b/c they were not among the 6/21-6/28/22 & 8/2-8/23/22 analytes reported)



Polling Question

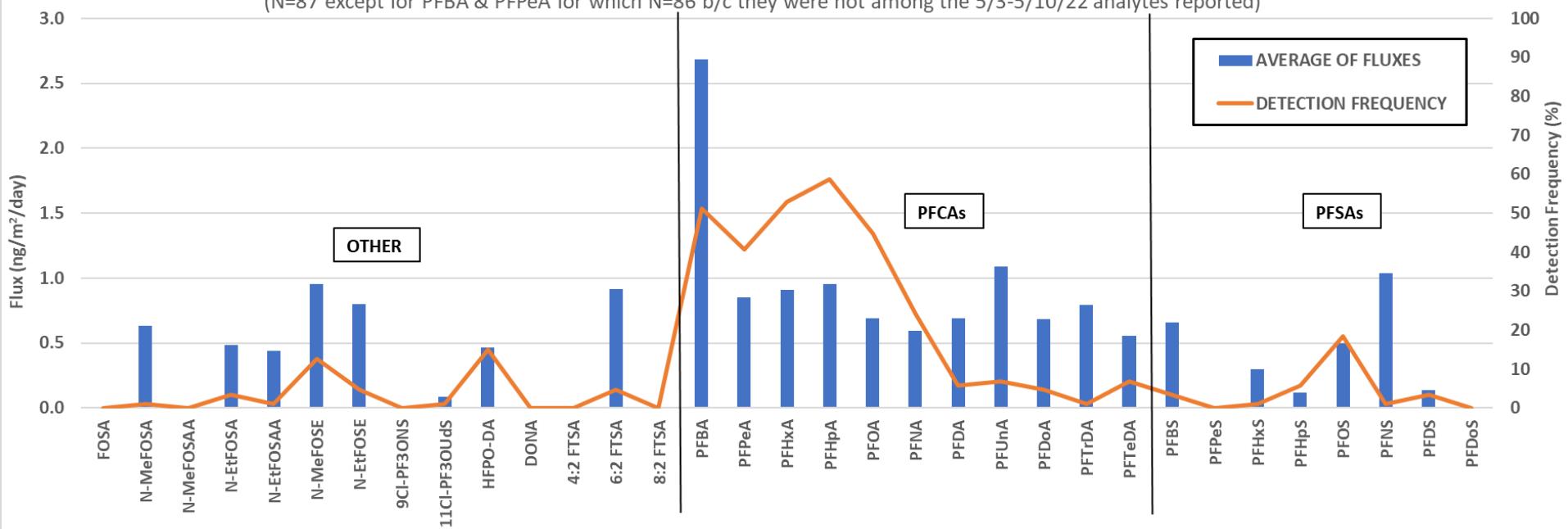
- ❖ **Which group of PFAS generally has the highest detection frequency %s and concentrations, particularly at the urban location?**

- A. The shorter-chained sulfonates (i.e., PFSAs).
- B. The longer-chained carboxylates (i.e., PFCAs).
- C. The shorter-chained carboxylates (i.e., PFCAs).
- D. The longer-chained sulfonates (i.e., PFSAs).

Average and Maximum Precipitation PFAS Fluxes vs Detection Frequencies

WF Ave. Precip. PFAS Fluxes & Detects

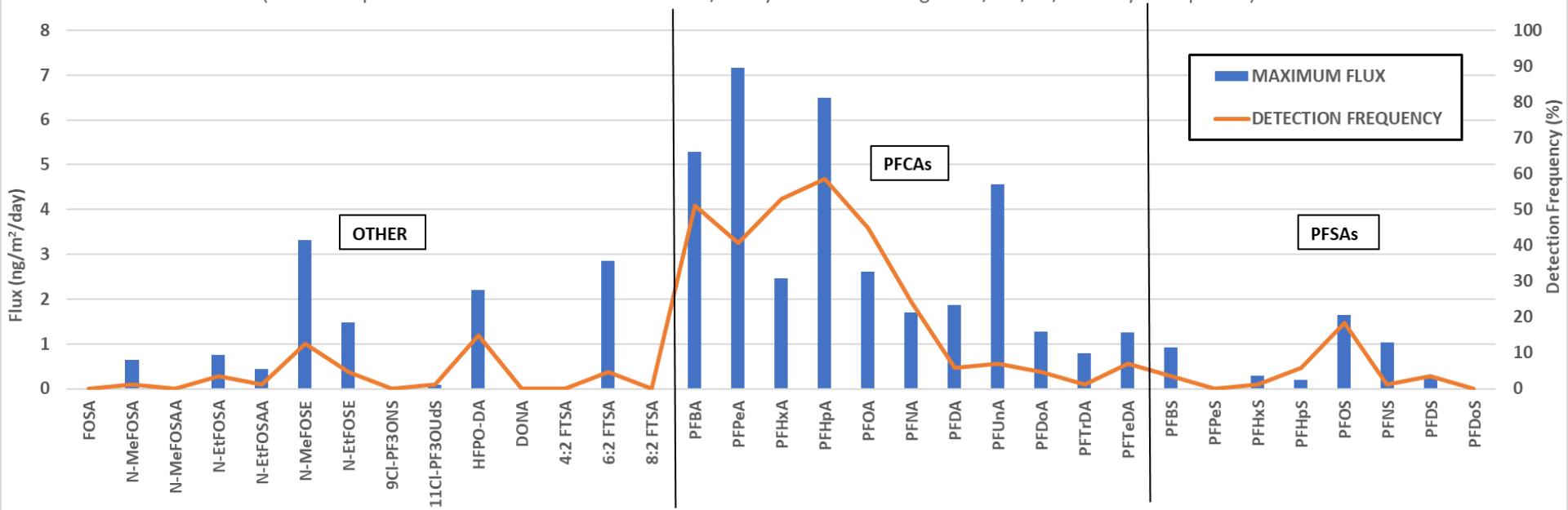
Average of Fluxes & Detection Frequency of PFAS Analytes at Whiteface Mountain, NY from 9/1/20 to 12/27/22
 (N=87 except for PFBA & PFPeA for which N=86 b/c they were not among the 5/3-5/10/22 analytes reported)



WF Max. Precip. PFAS Fluxes & Detects

Maximum Fluxes & Detection Frequency of PFAS Analytes at Whiteface Mountain, NY from 9/1/20 to 12/27/22

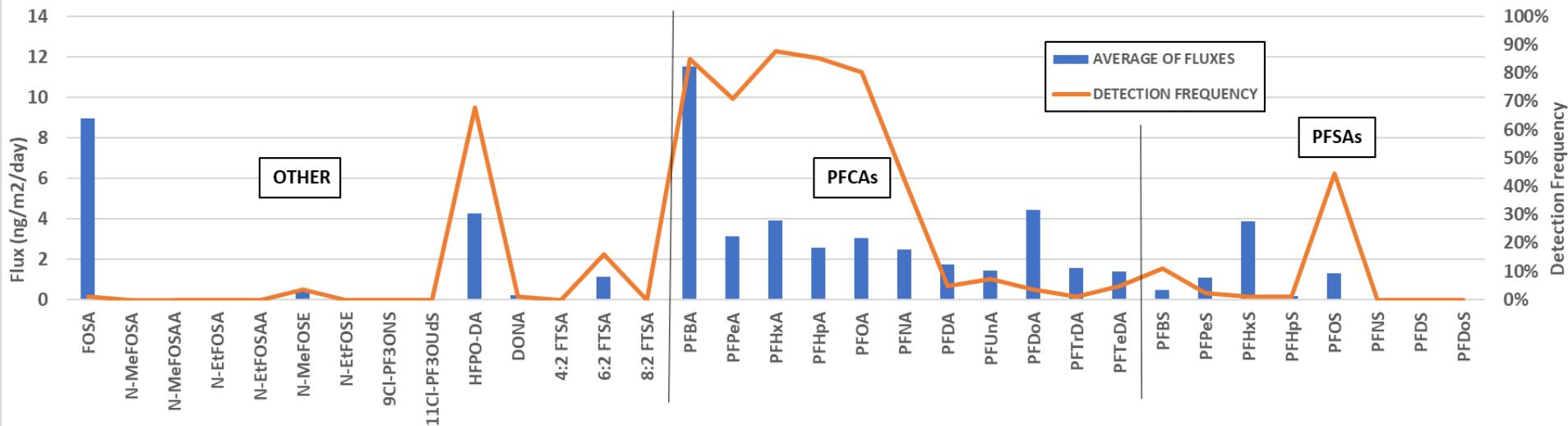
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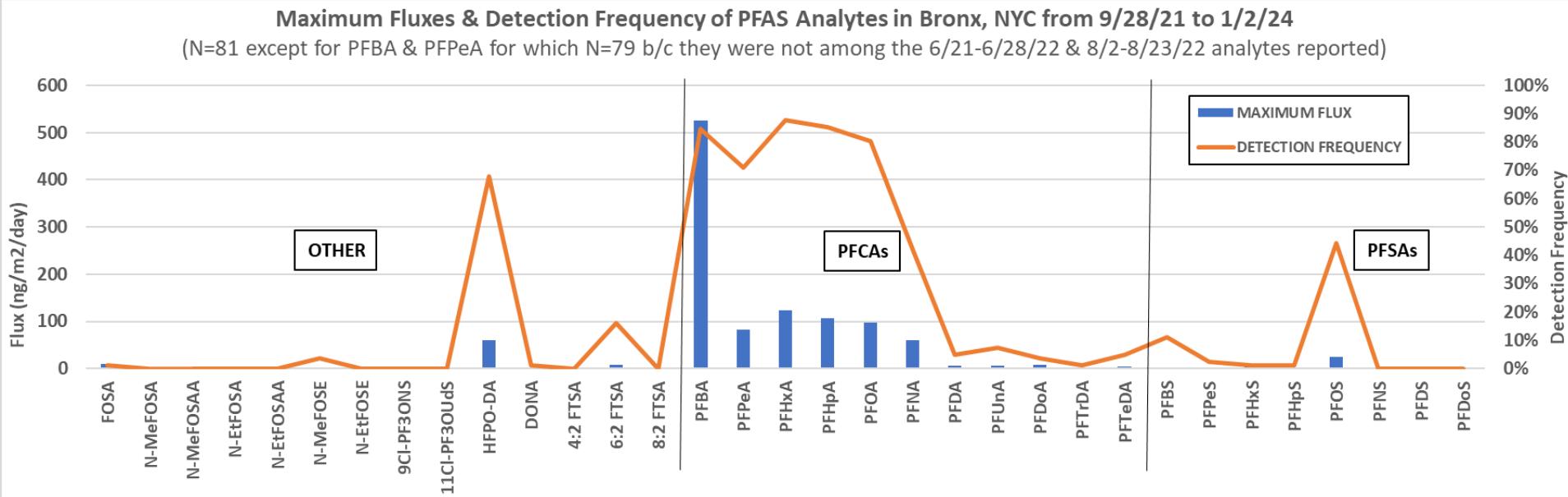
Bronx Ave. Precip. PFAS Fluxes & Detects

Average of Fluxes & Detection Frequency of PFAS Analytes in Bronx, NYC from 9/28/21 to 1/2/24

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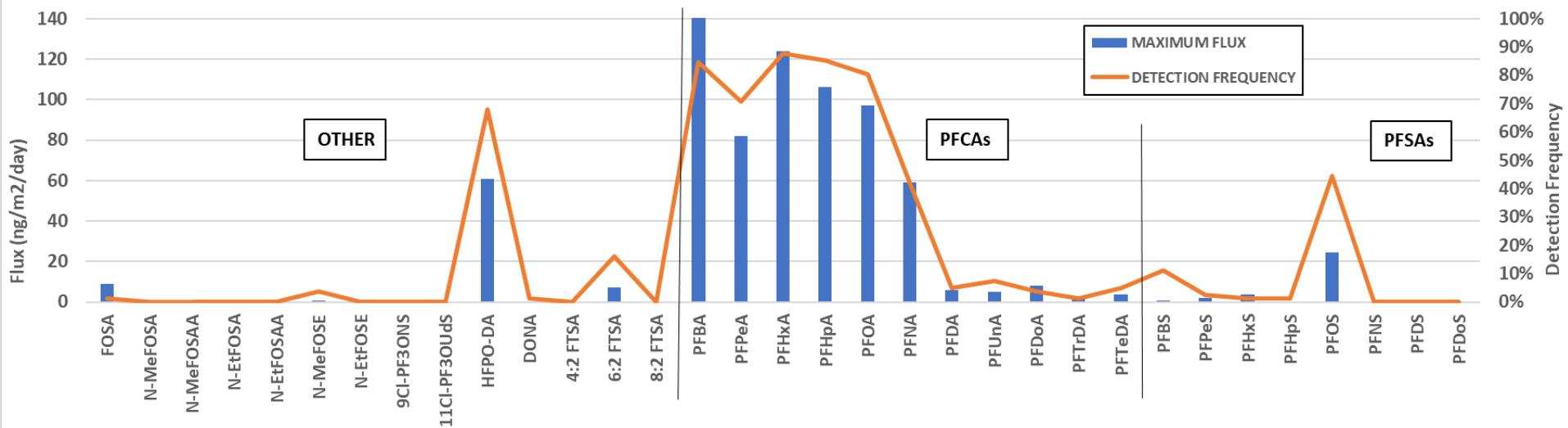


Bronx Max. Precip. PFAS Fluxes & Detects



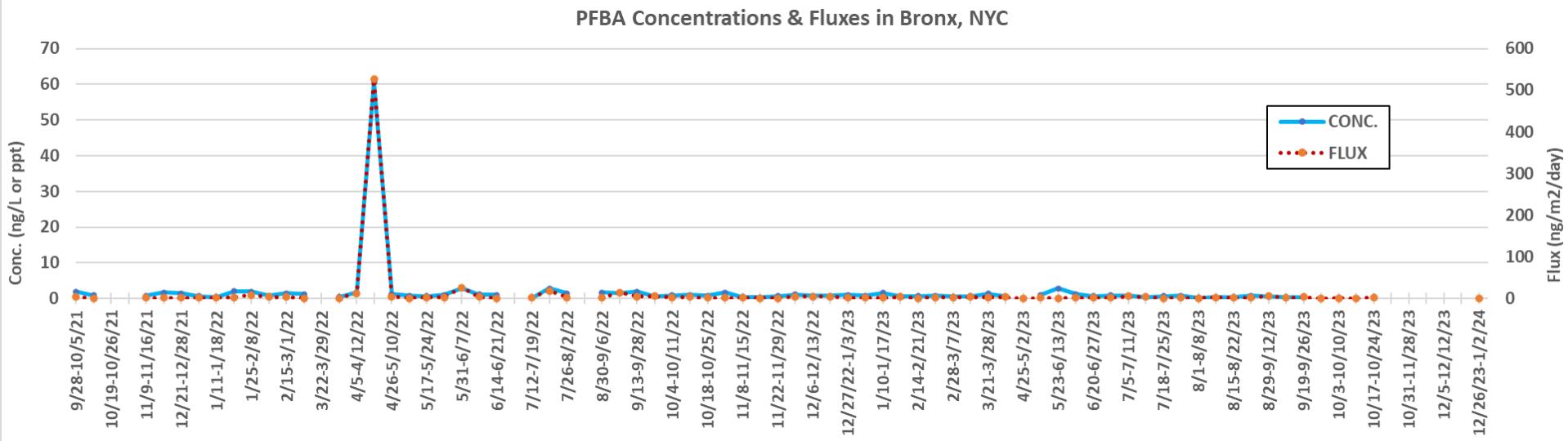
Bronx Max. Precip. PFAS Fluxes & Detects (Reduced Scale)

Maximum Fluxes & Detection Frequency of PFAS Analytes from 9/28/21 to 1/2/24 (Reduced Scale)
 (N=81 except for PFBA & PFPeA for which N=79 b/c they were not among the 6/21-6/28/22 & 8/2-8/23/22 analytes reported)

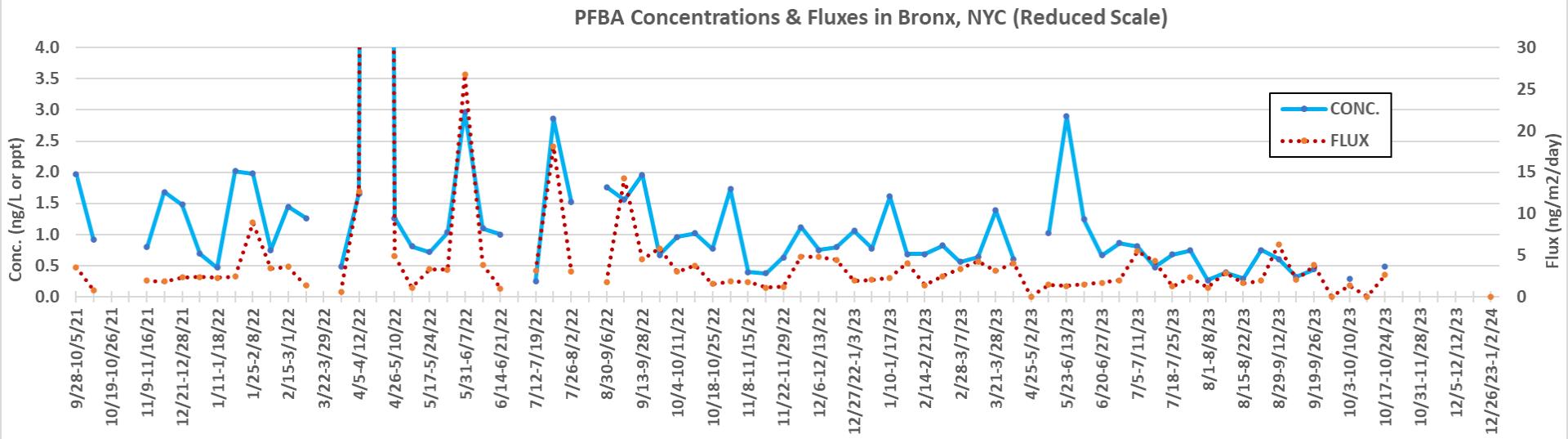


Individual Precipitation Concentrations vs Fluxes for Select PFAS

Bronx Precipitation PFBA Conc.s & Fluxes

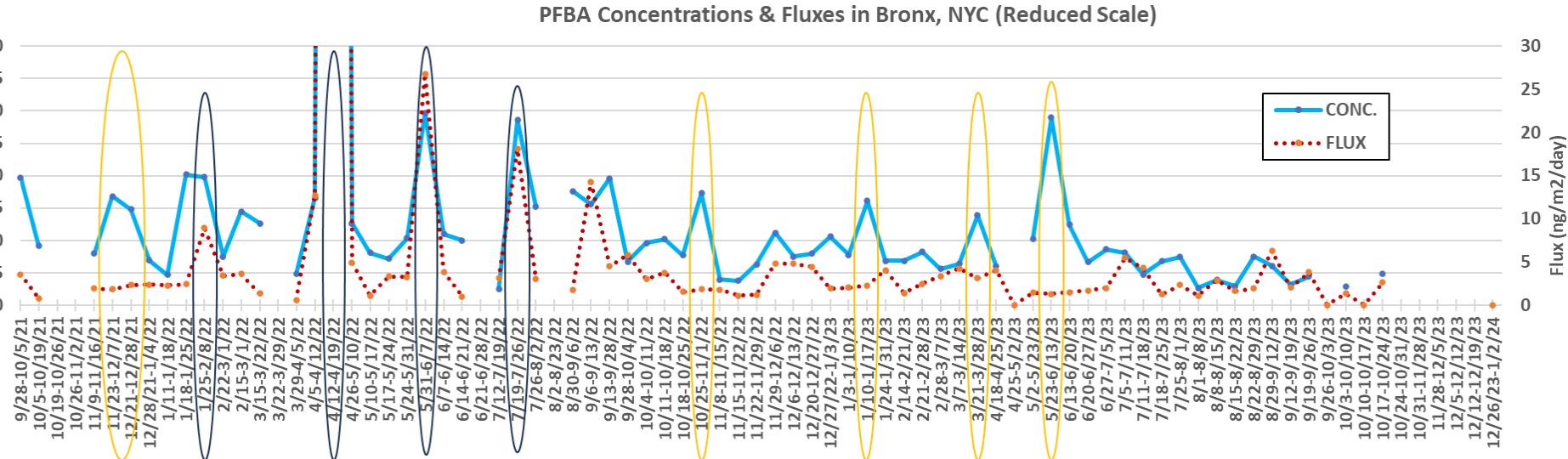


Bronx Precip. PFBA Conc.s & Fluxes (Reduced Scale)

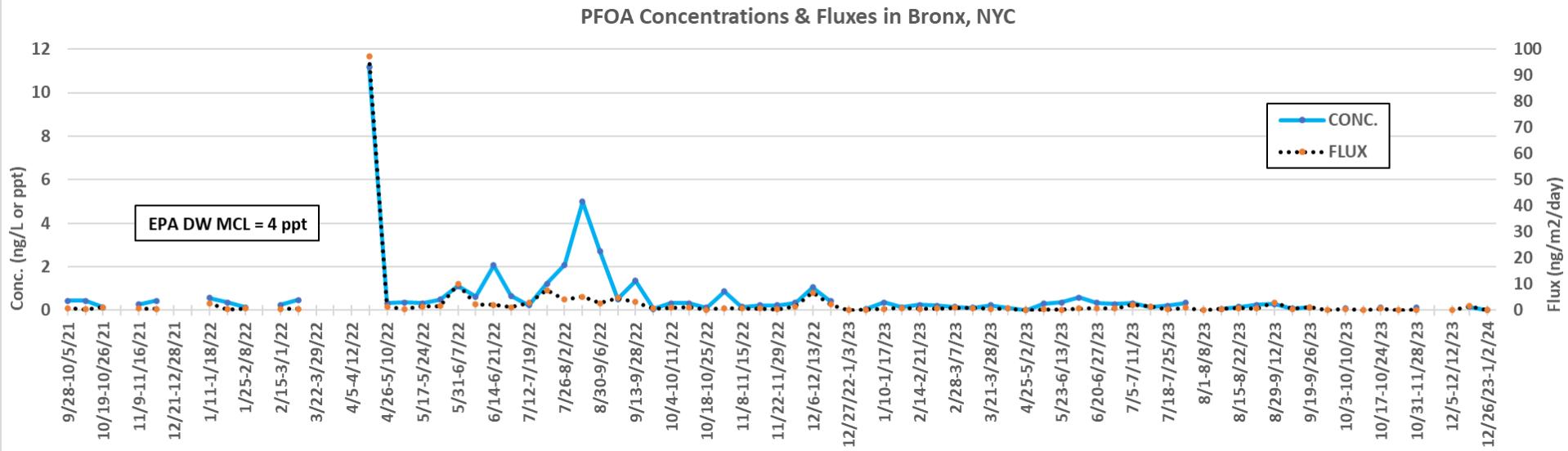


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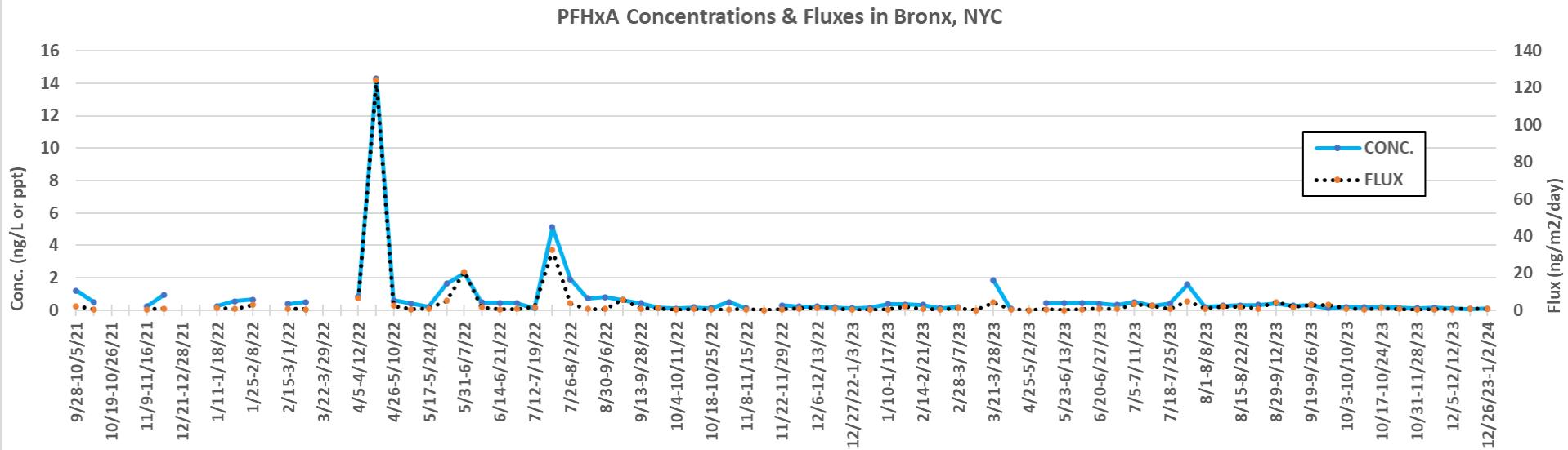
Bronx Precip. PFBA Conc.s & Fluxes (Reduced Scale)



Bronx Precipitation PFOA Conc.s & Fluxes

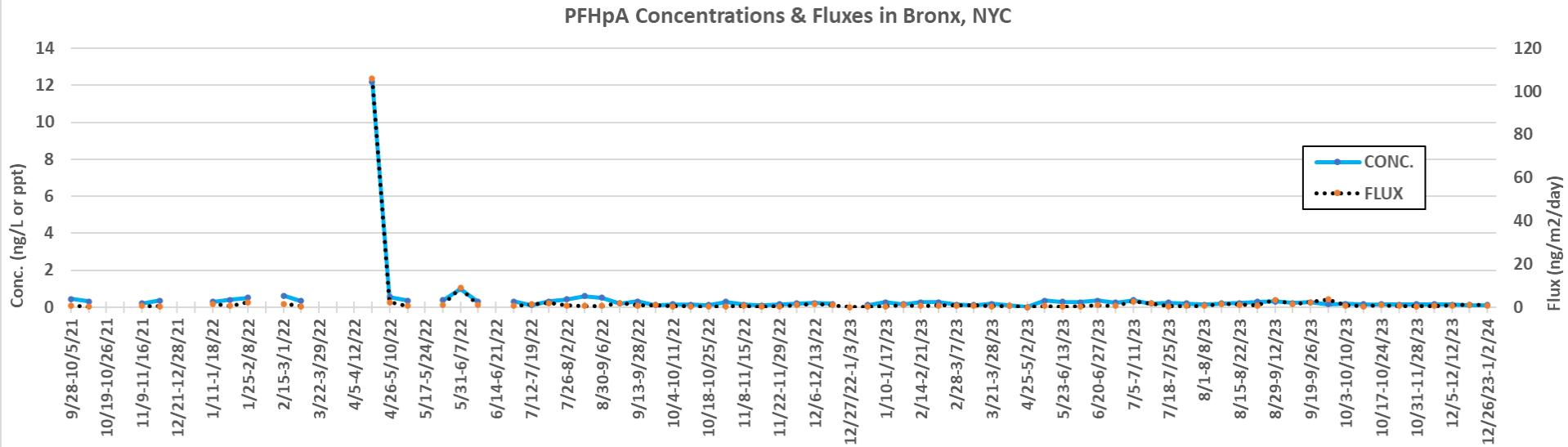


Bronx Precipitation PFHxA Conc.s & Fluxes



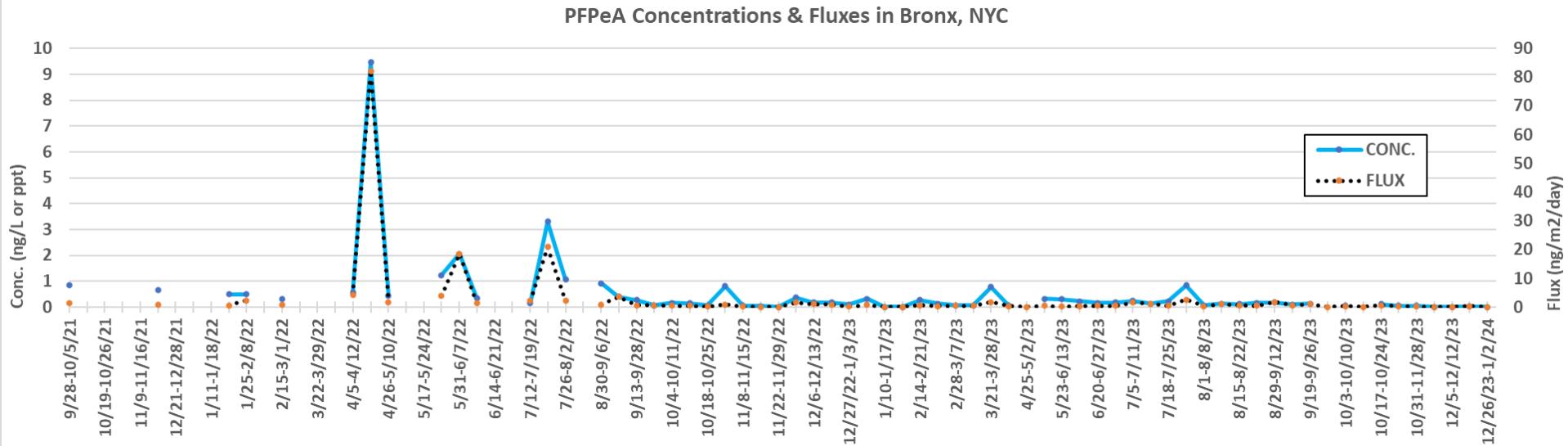
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Bronx Precipitation PFHpA Conc.s & Fluxes



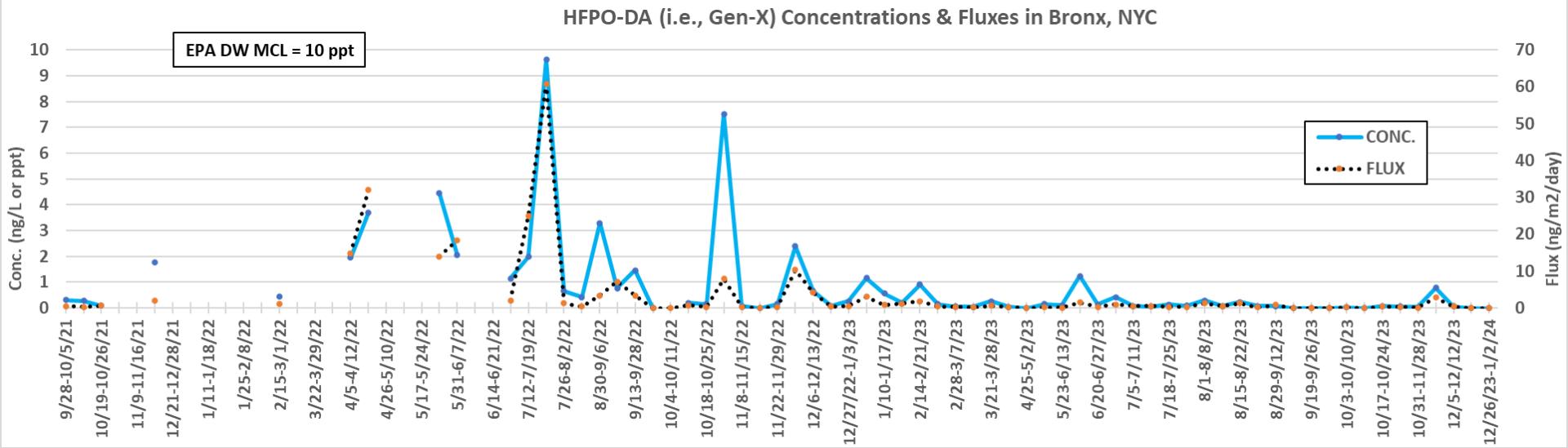
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Bronx Precipitation PFPeA Conc.s & Fluxes

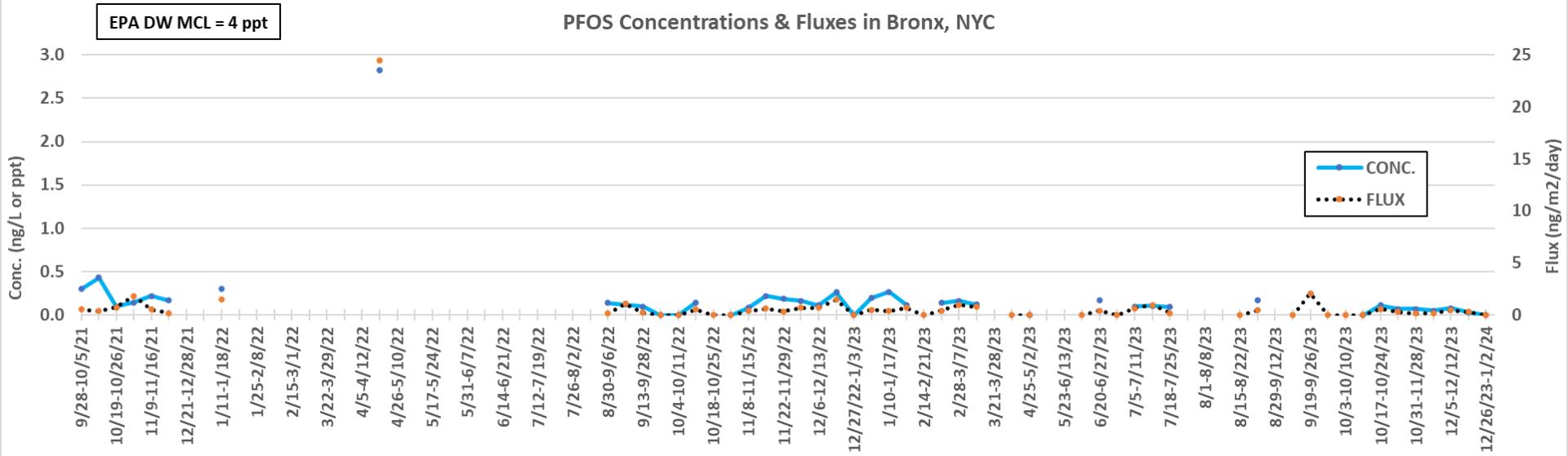


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Bronx Precip. HFPO-DA (i.e., Gen-X) Conc.s & Fluxes

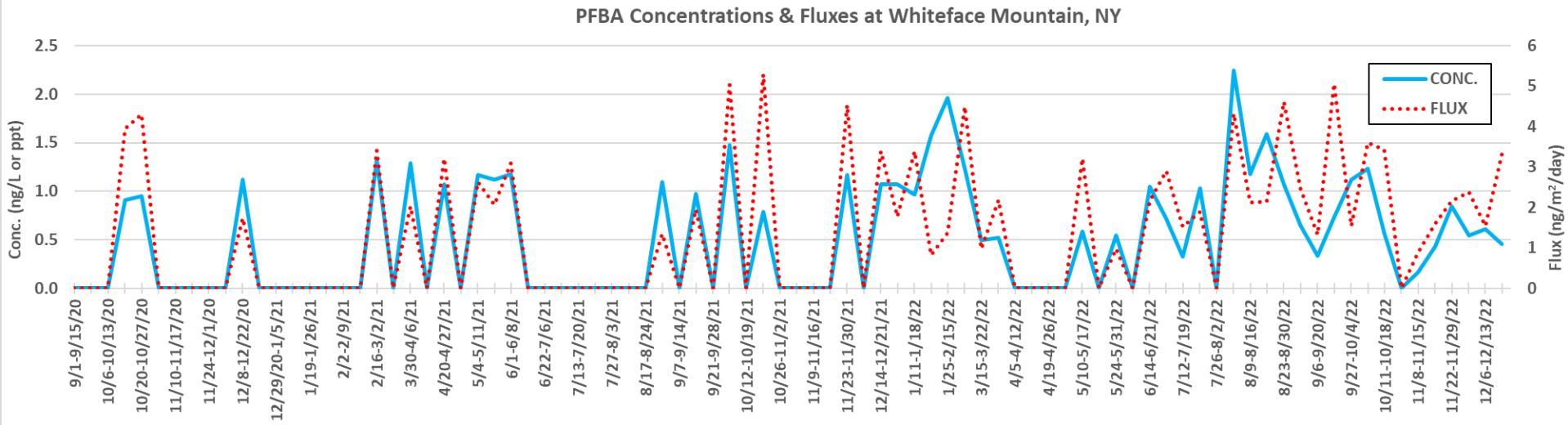


Bronx Precipitation PFOS Conc.s & Fluxes

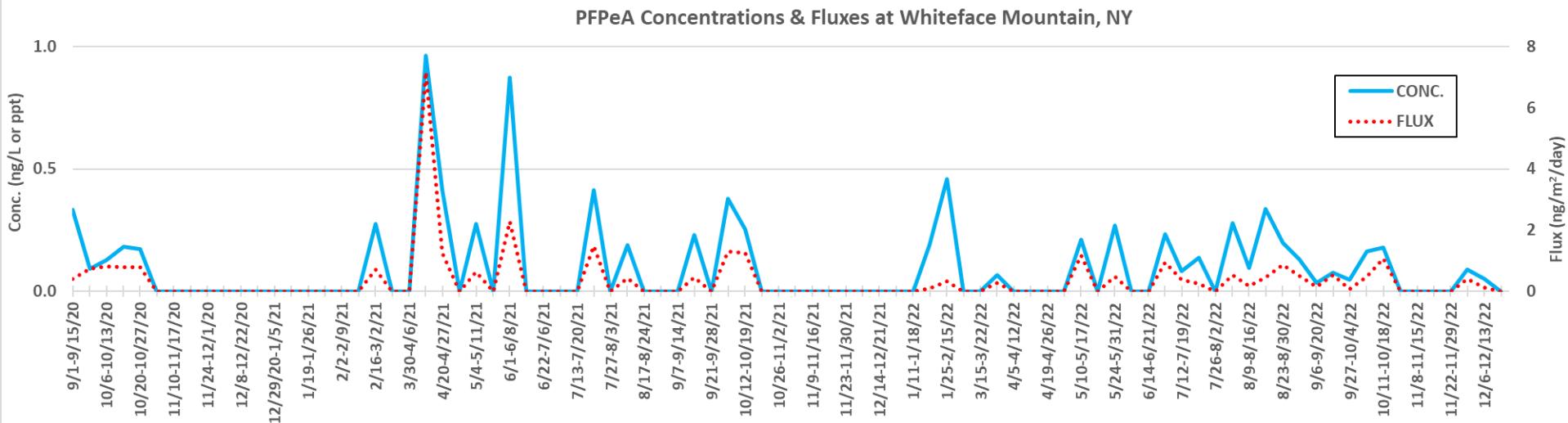


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WF Precipitation PFBA Conc.s & Fluxes

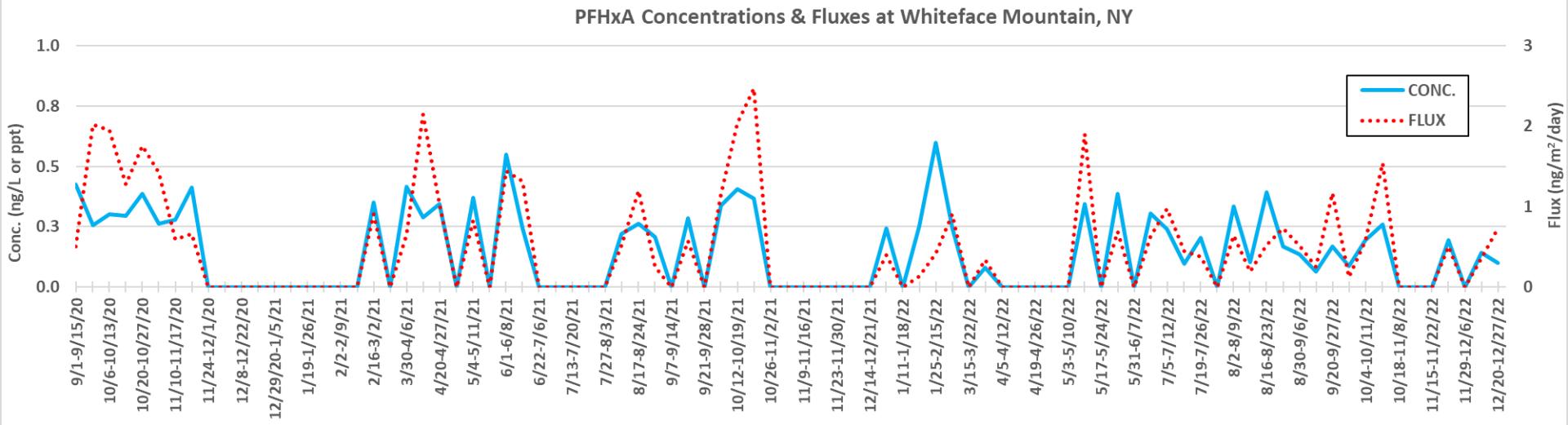


WF Precipitation PFPeA Conc.s & Fluxes



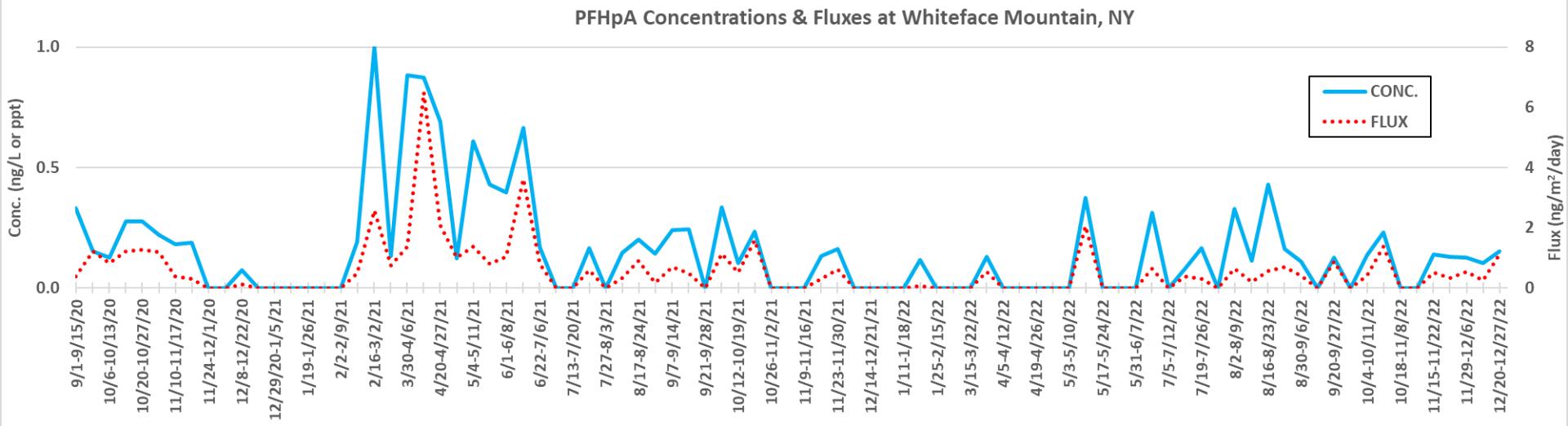
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WF Precipitation PFHxA Conc.s & Fluxes

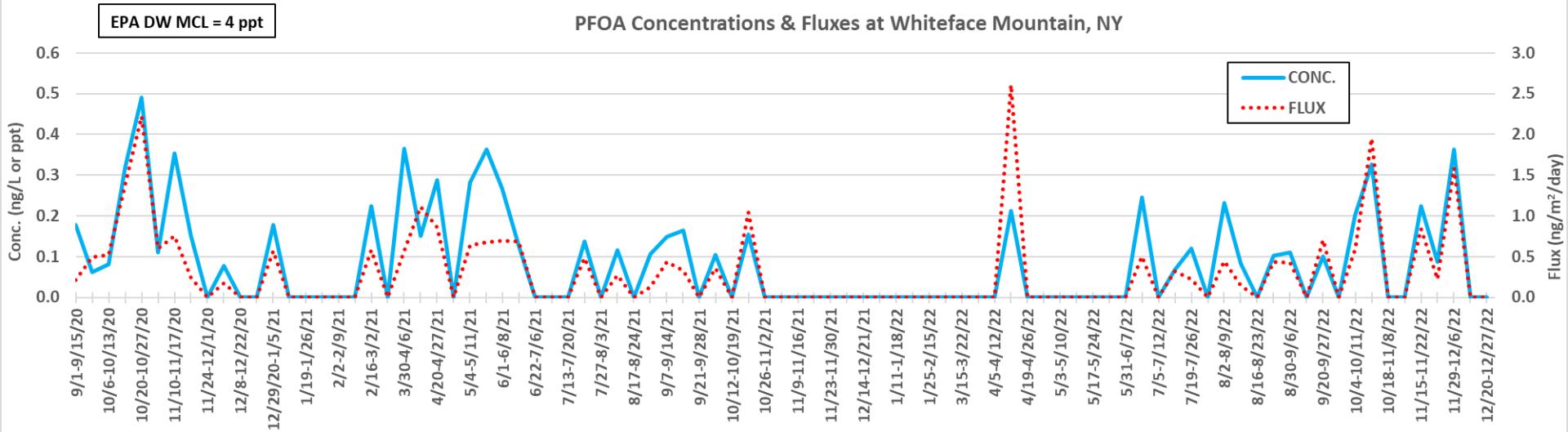


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WF Precipitation PFHpA Conc.s & Fluxes

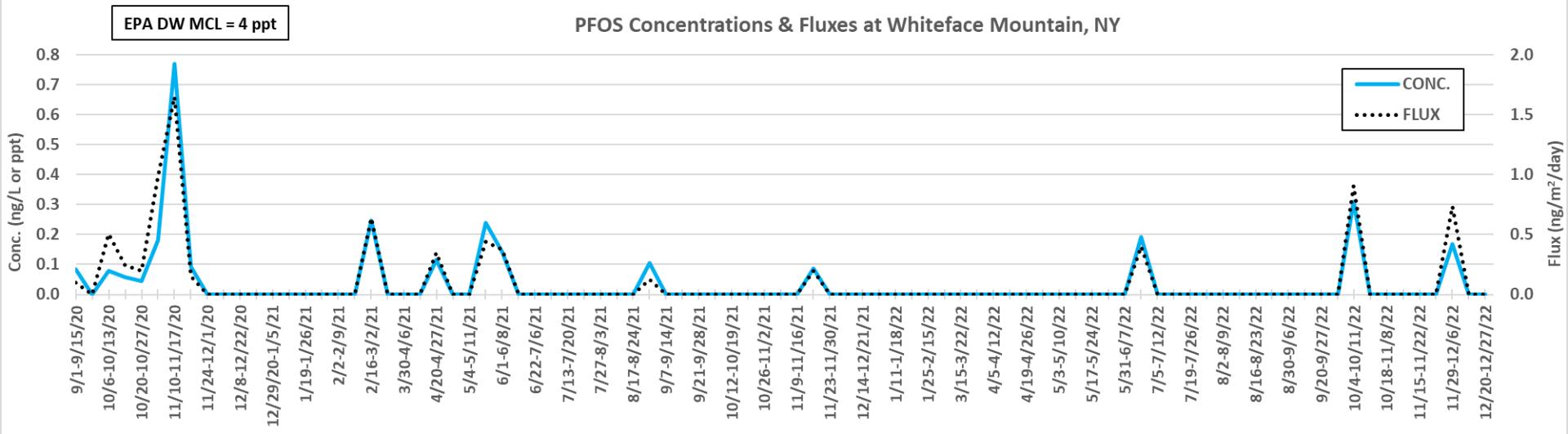


WF Precipitation PFOA Conc.s & Fluxes



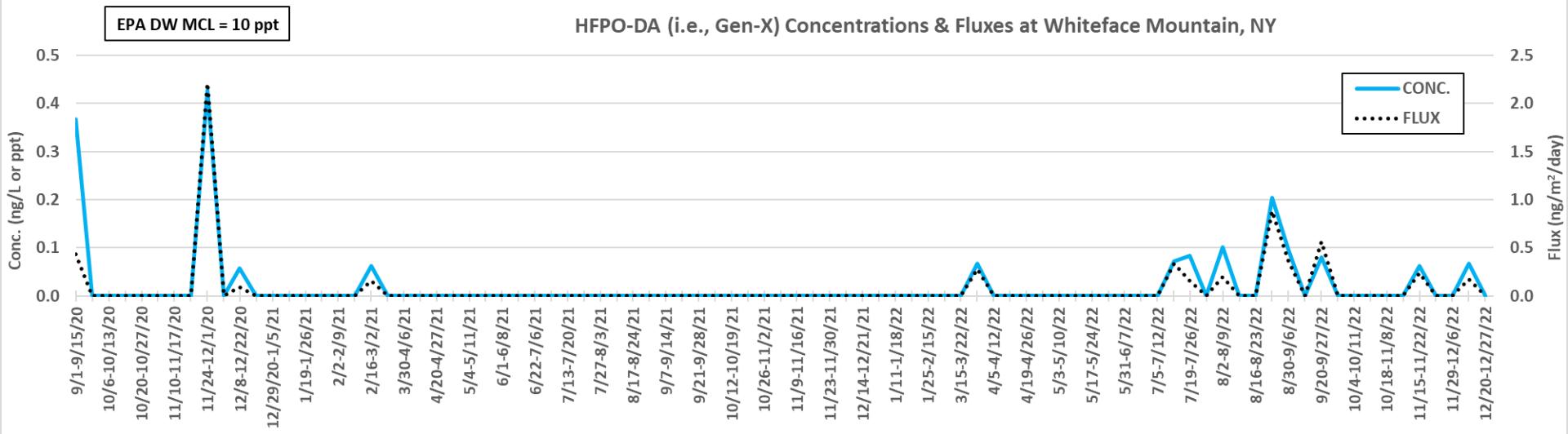
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WF Precipitation PFOS Conc.s & Fluxes



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WF Precip. HFPO-DA (i.e., Gen-X) Conc.s & Fluxes

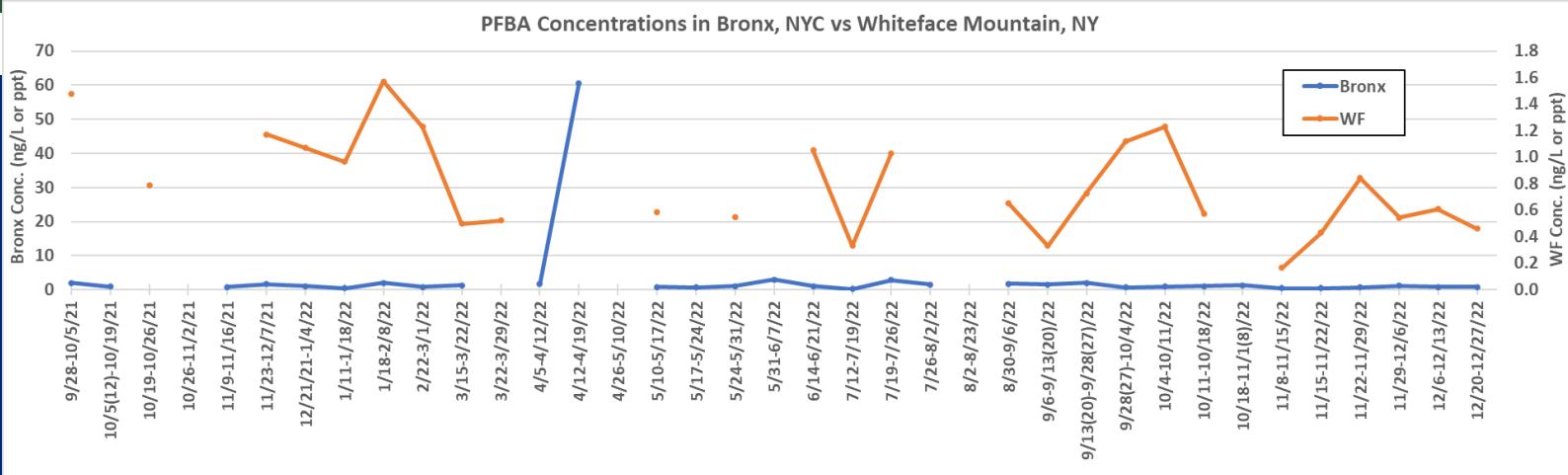


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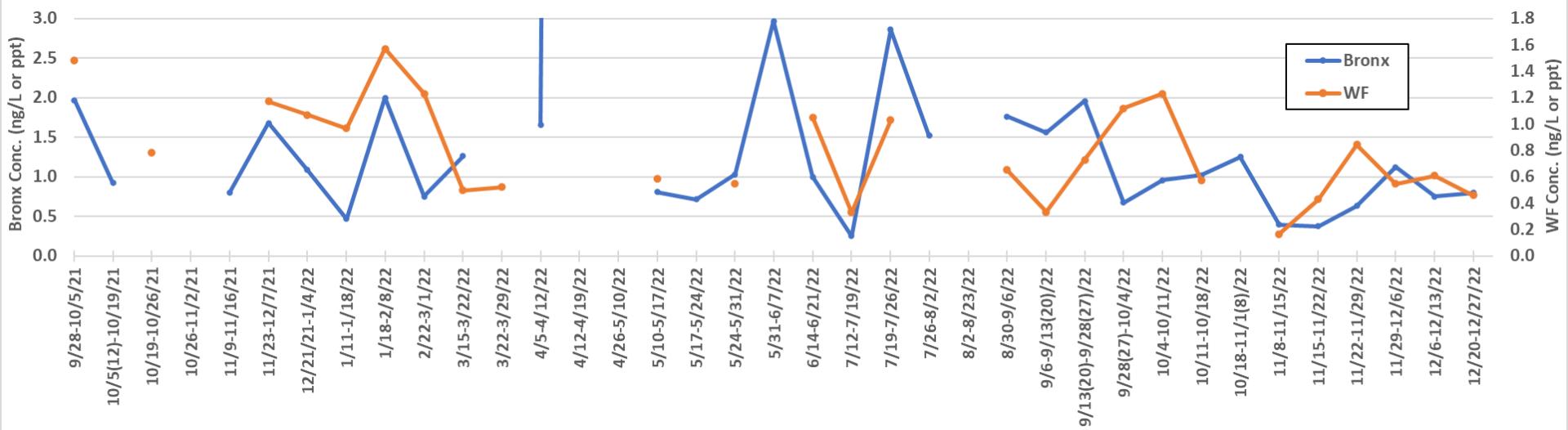
Individual Precipitation Concentration Trendline Comparisons between Whiteface Mountain and the Bronx for Select PFAS



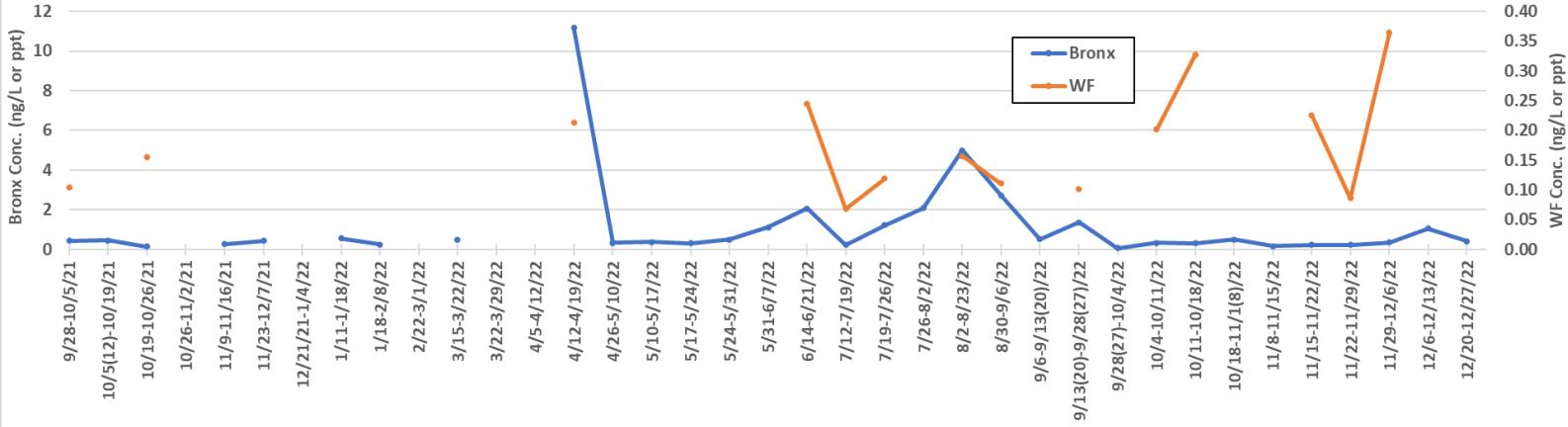
PFBA Concentrations in Bronx, NYC vs Whiteface Mountain, NY



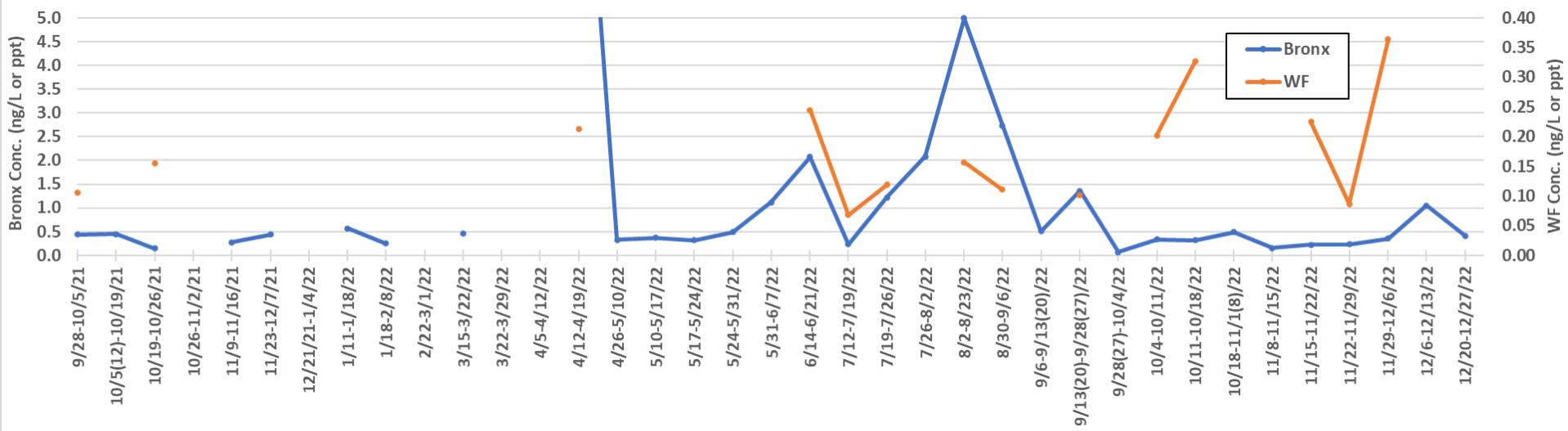
PFBA Concentrations in Bronx, NYC vs Whiteface Mountain, NY (Reduced Scale)



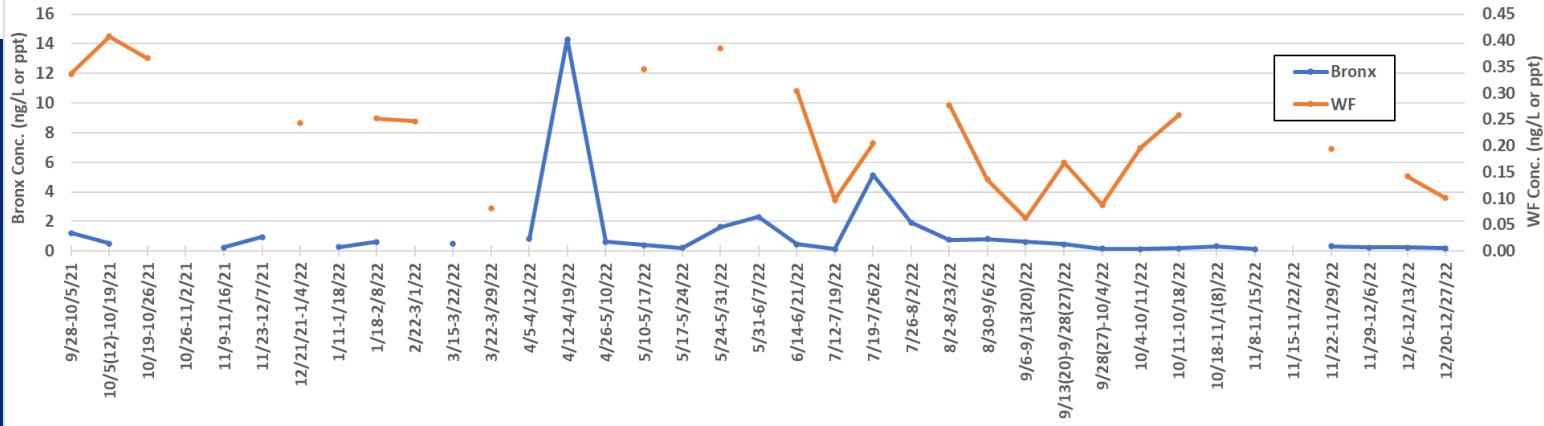
PFOA Concentrations in Bronx, NYC vs Whiteface Mountain, NY



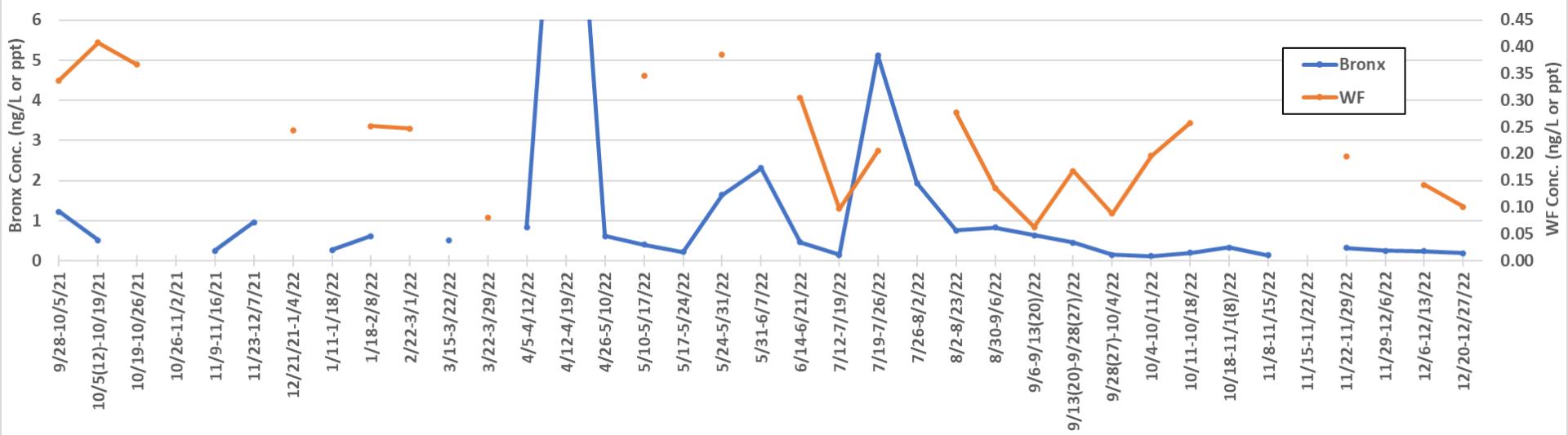
PFOA Concentrations in Bronx, NYC vs Whiteface Mountain, NY (Reduced Scale)



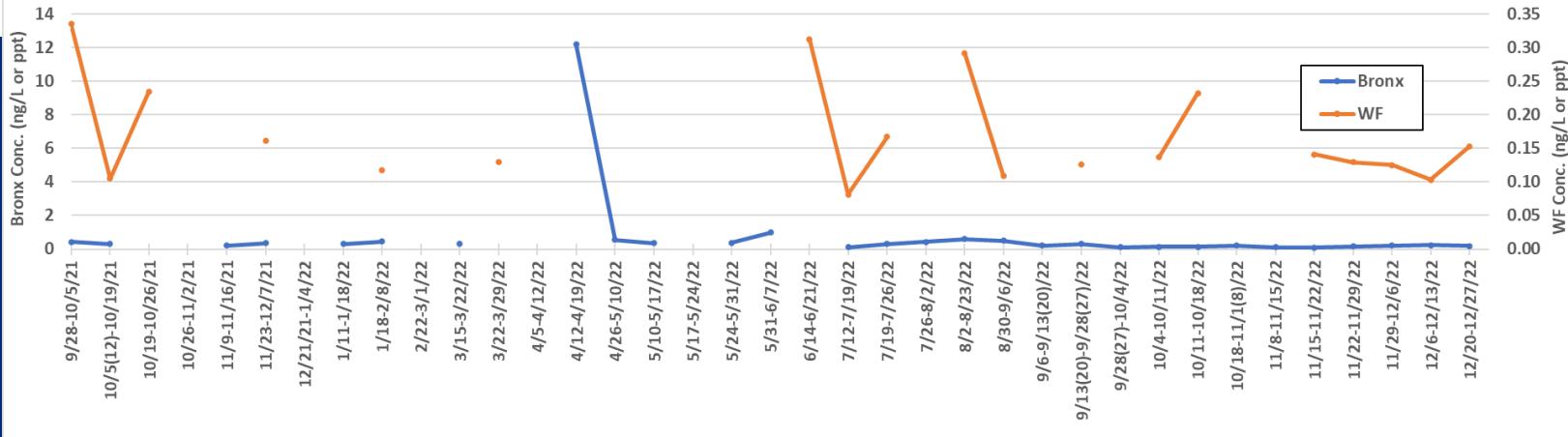
PFHxA Concentrations in Bronx, NYC vs Whiteface Mountain, NY



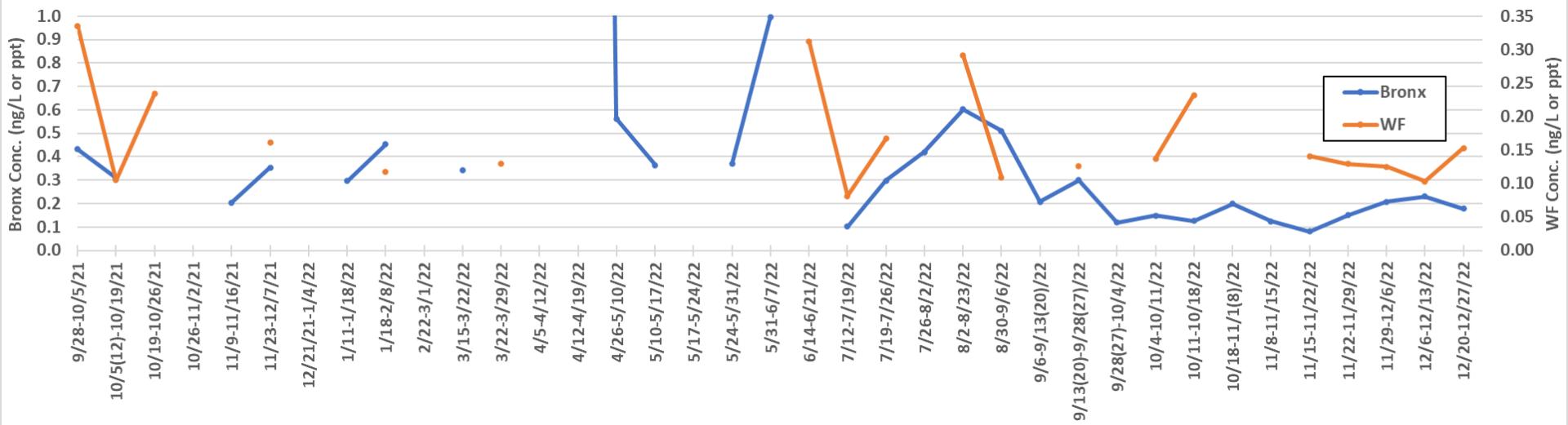
PFHxA Concentrations in Bronx, NYC vs Whiteface Mountain, NY (Reduced Scale)



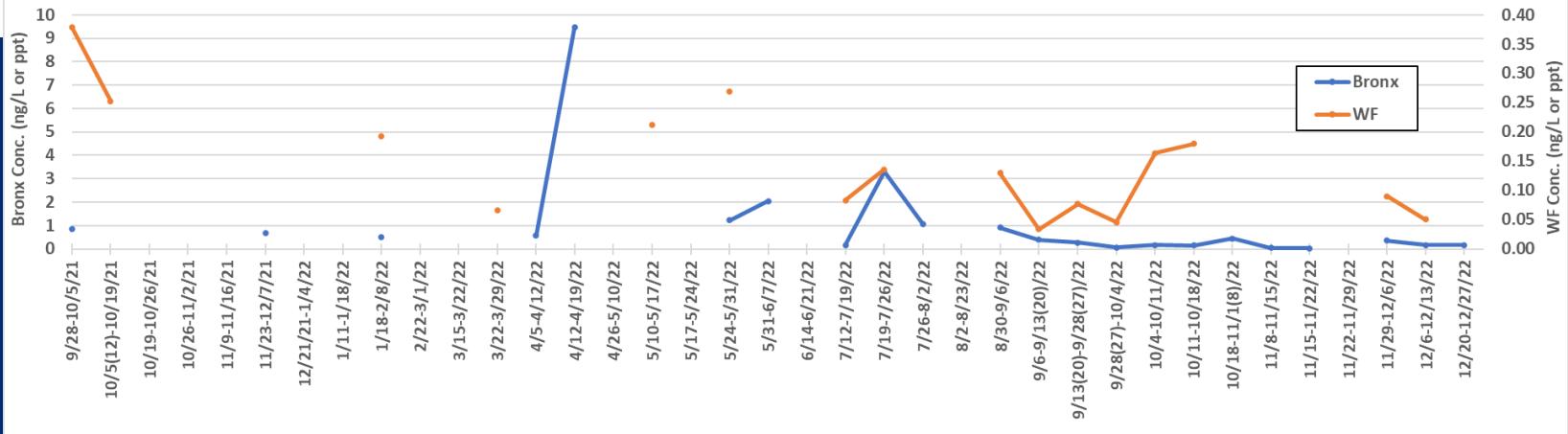
PFHpA Concentrations in Bronx, NYC vs Whiteface Mountain, NY



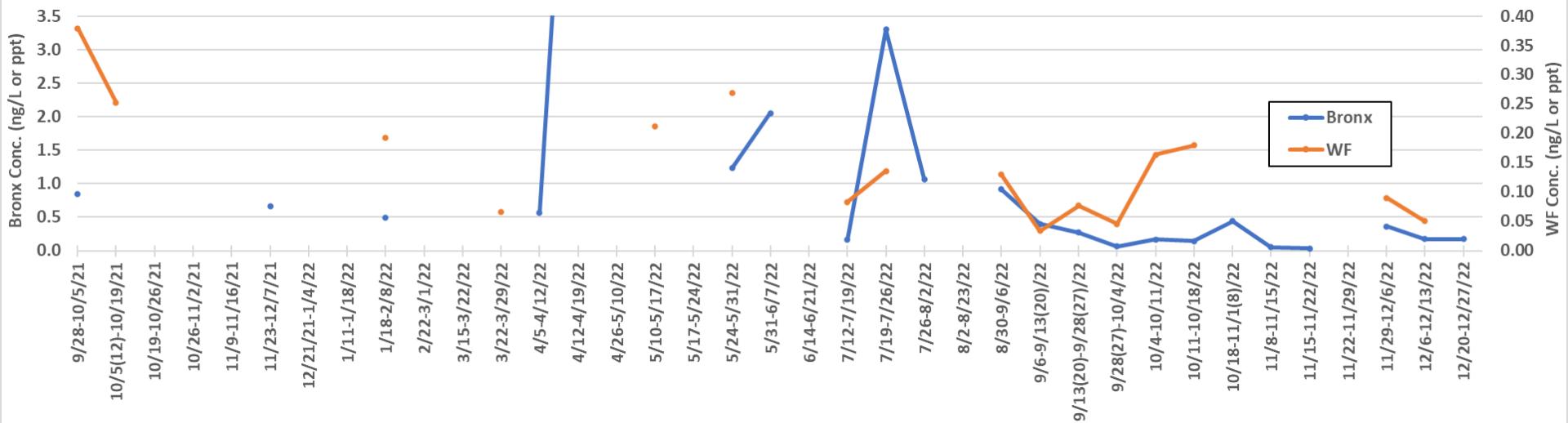
PFHpA Concentrations in Bronx, NYC vs Whiteface Mountain, NY (Reduced Scale)



PFPeA Concentrations in Bronx, NYC vs Whiteface Mountain, NY

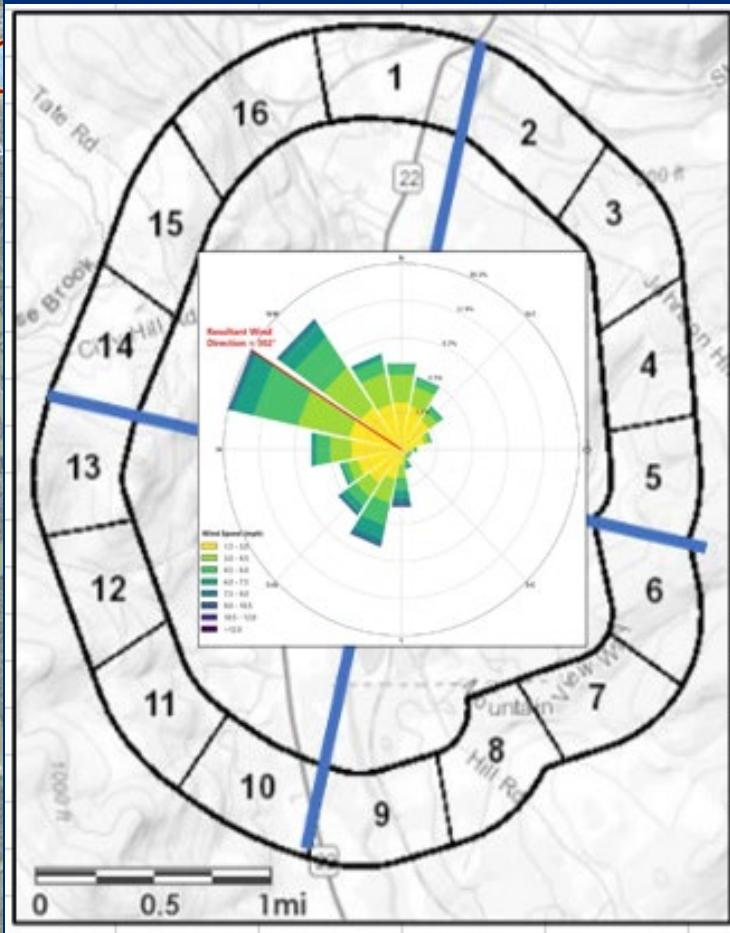
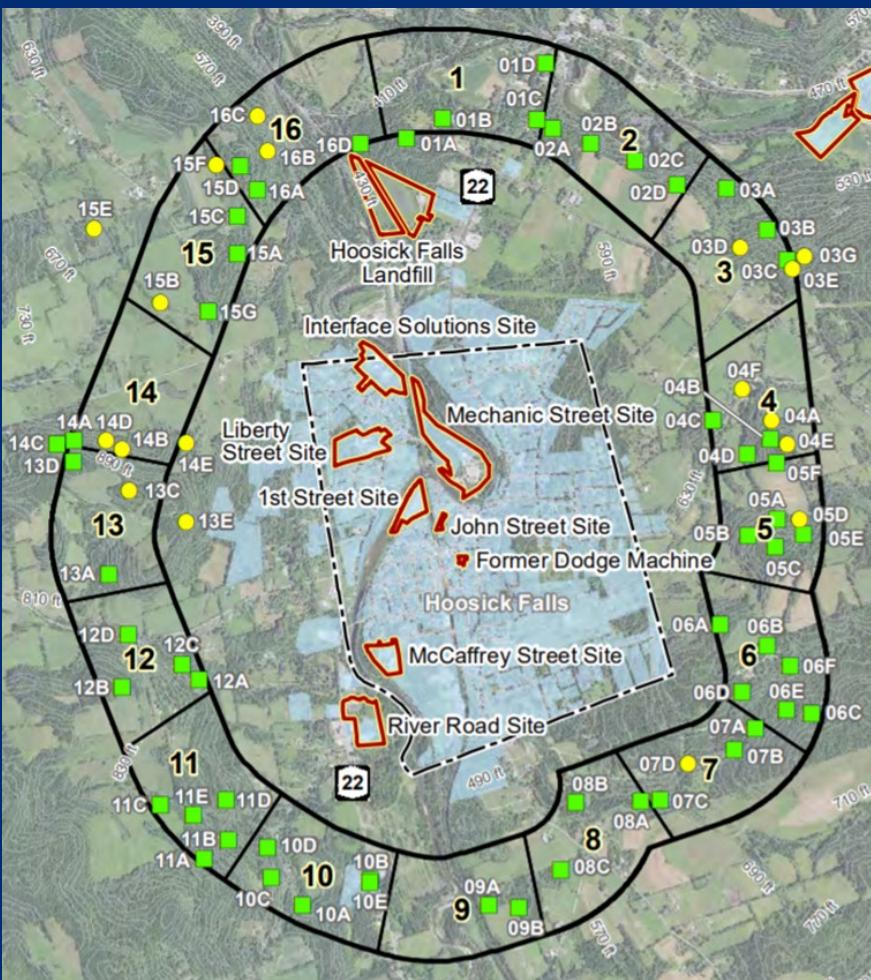


PFPeA Concentrations in Bronx, NYC vs Whiteface Mountain, NY (Reduced Scale)

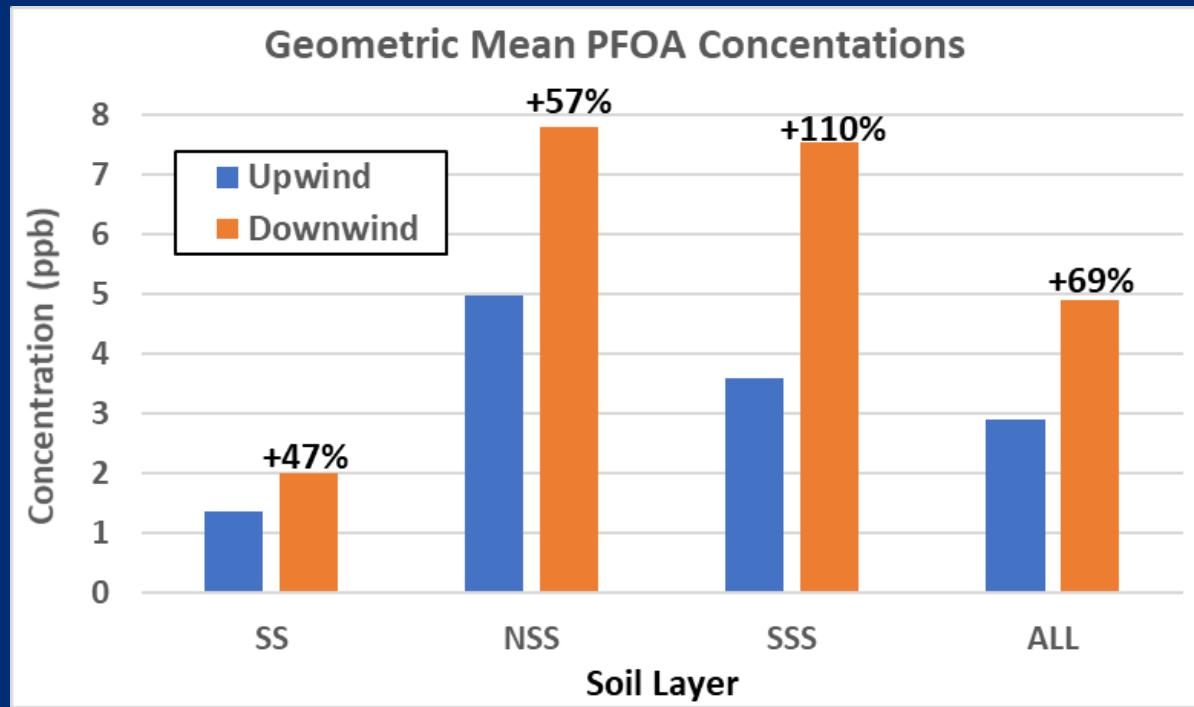


Summaries of Two NYS PFAS Aerial Transport & Deposition Investigations

Hoosick Falls PFAS Study



HF Soil PFOA Conc.s Upwind vs Downwind



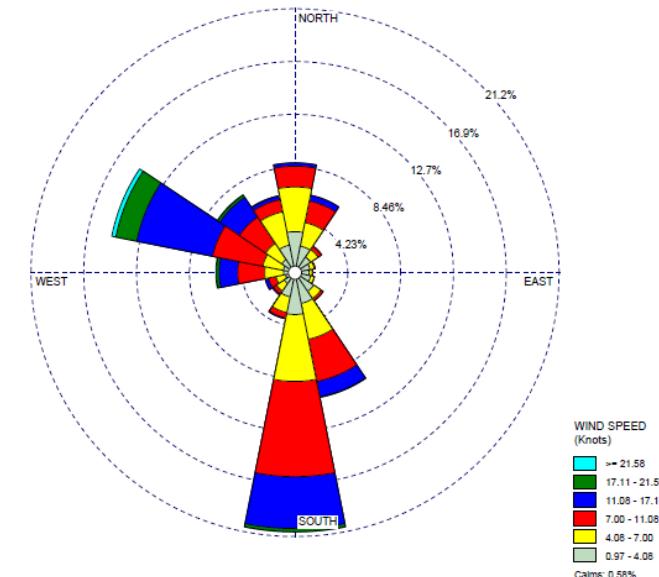
Norlite PFAS Study

- Soil Samples
- Water Samples



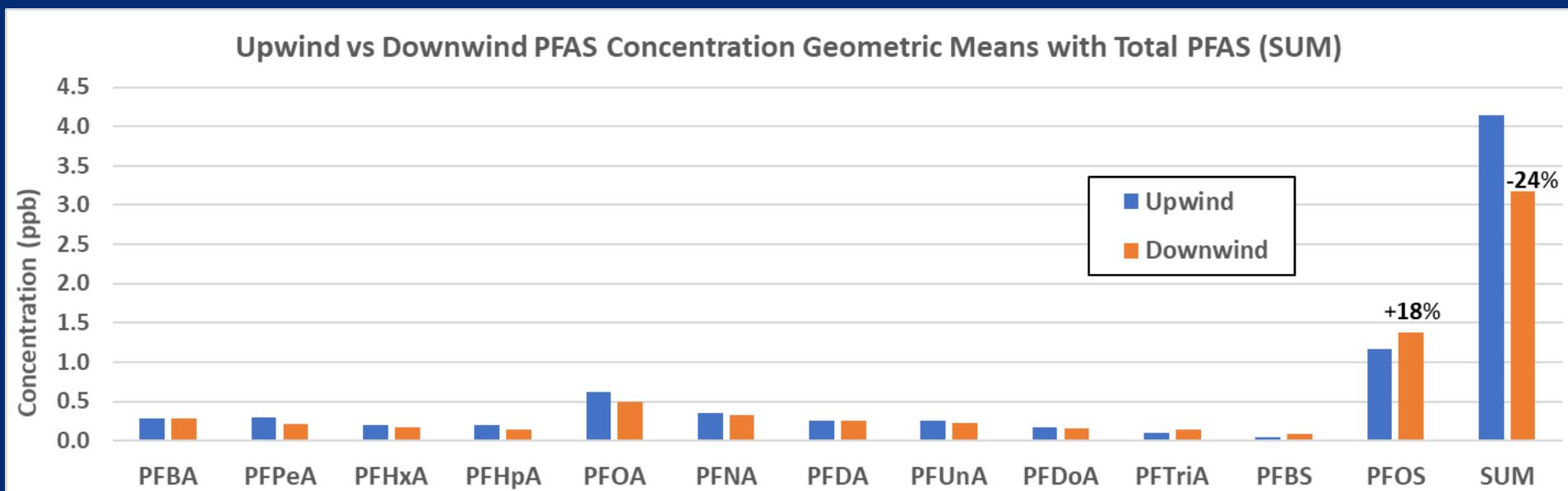
WIND ROSE PLOT:
KALB- Albany International Airport, Colonie, NY
2015-2019

DISPLAY:
Wind Speed
Direction (blowing from)



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Soil PFAS Concentrations Upwind vs Downwind



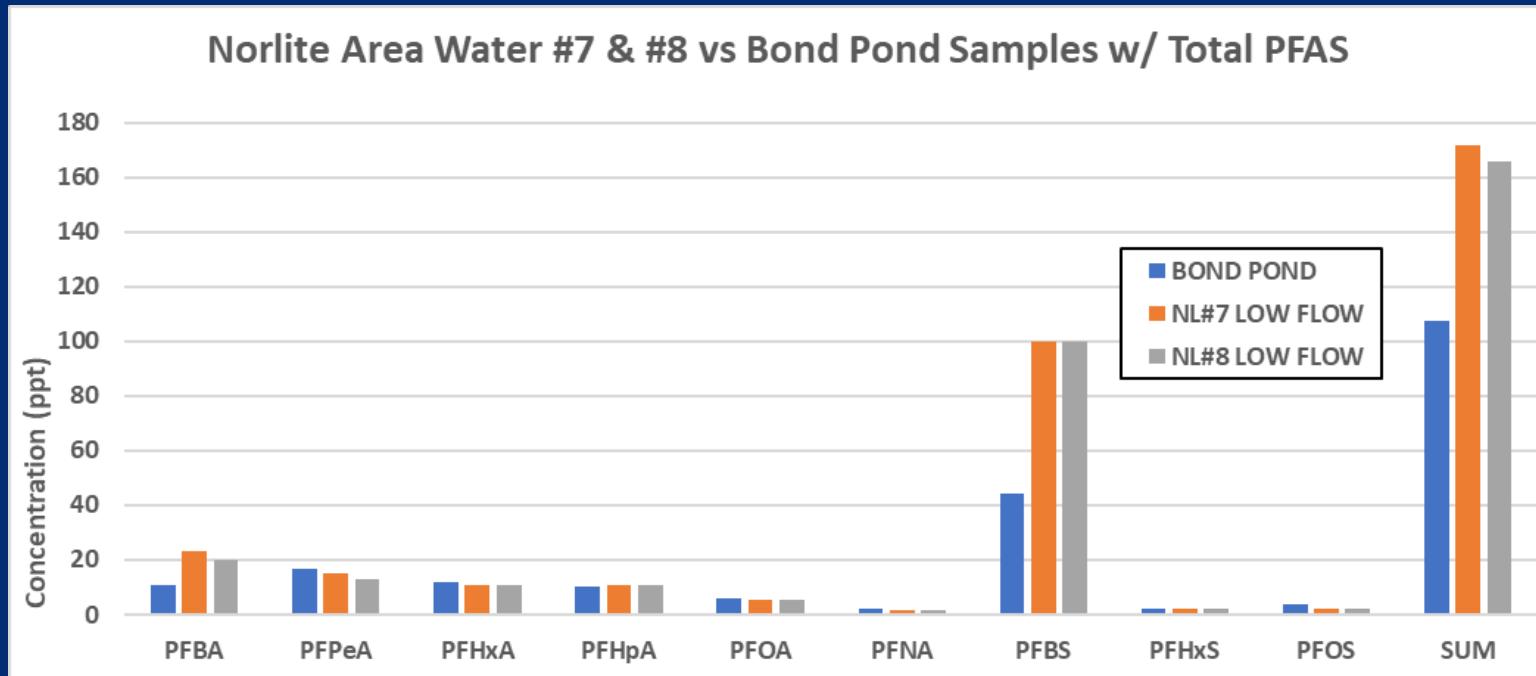
Soil Concentrations Comparison

Sampling Result Comparison:

- PFAS concentrations are consistent with background studies performed at other locations in the Northeast.
- No clear evidence of contamination detected from the incineration of AFFF.

Analyte	Vermont Range ¹	Norlite Environmental Sampling Report Range	Catskills/Adirondack Range ³
PFBA	N/A	0.1 – 0.9	5
PFPeA	0.14 – 1.3	ND – 1.6	5
PFHxA	0.05 – 4.4	0.12 – 1.1	ND – 0.32
PFHpA	0.044 – 0.9	0.063 – 1.0	ND – 0.41
PFOA	0.052 – 4.9	0.19 – 1.1	0.26 – 1.1
PFNA	0.051 – 5.0	0.16 – 2.4	ND – 0.45
PFDA	0.043 – 7.6	0.073 – 2.1	5
PFUnDA	0.038 – 2.6	0.12 – 1.8	ND – 0.34
PFDoDA	0.10 – 0.69	ND – 0.35	ND
PFTrDA	N/A - 0.13	ND - 0.264	5
PFTeDA	N/A	ND	5
PFHxDA	N/A	5	5
PFODA	N/A	5	5
PFBS	0.033 – 1.6	ND	5
PFHxS	0.076 – 0.88	ND - 1.5	
PFOS	0.106 – 9.7	0.26 – 9.8	ND – 1.4
PFDS	0.032 – 0.92	ND - 5.7	

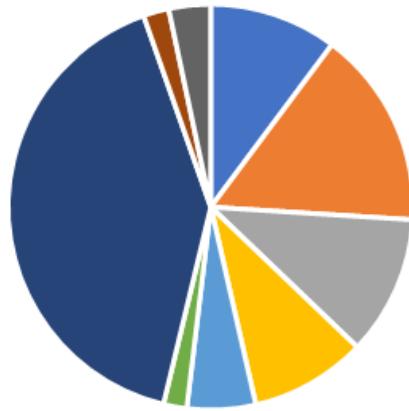
Pond Surface Water PFAS Concentrations



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Surface Water PFAS Concentrations

Initial Norlite Pond Sample



■ PFBA

■ PFPeA

■ PFHxA

■ PFHpA

■ PFOA

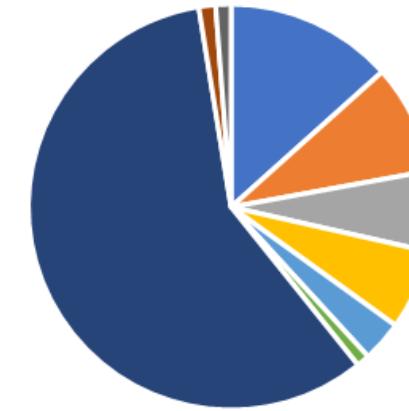
■ PFNA

■ PFBS

■ PFHxS

■ PFOS

NYSDEC Norlite Pond Sample



■ PFBA

■ PFPeA

■ PFHxA

■ PFHpA

■ PFOA

■ PFNA

■ PFBS

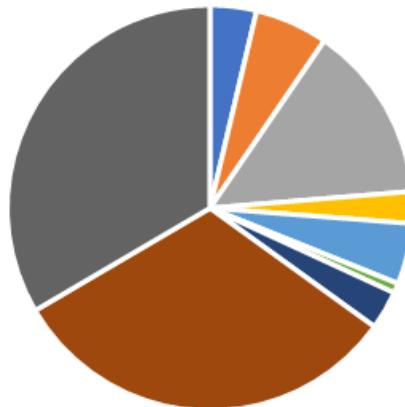
■ PFHxS

■ PFOS

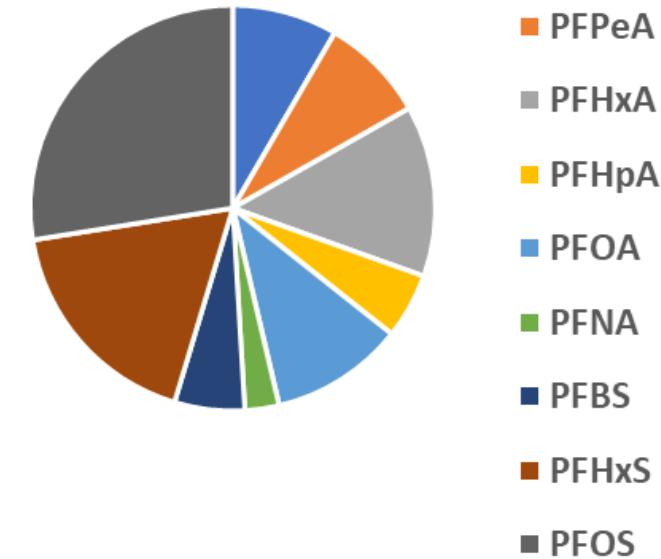


Surface Water PFAS Concentrations

NYS AFFF Training Site#1 Averages



NYS AFFF Training Site#2 Averages



Thanks!

Questions/Thoughts/Comments?

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(518) 402-8307