



RTI Laboratories
33080 Industrial Rd.
Livonia, MI 48150
TEL: (734) 422-8000
Website: www.rtilab.com

Friday, August 11, 2023

Grayson Anderson
Sprinturf
146 Fairchild Street, Suite 150
Daniel Island, SC 29492
TEL:
FAX:

RE: PFAS on 2 solids
Work Order #: 2307542
Dear Grayson Anderson:

There were no problems with the analytical events associated with this report unless noted in the Case Narrative.

This report may only be reproduced in its entirety. Individual pages, reproduced without supporting documentation, do not contain related information and may be misinterpreted by other data reviewers.

Quality control data is within laboratory defined or method specified acceptance limits except if noted.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Lloyd Kaufman", is written over a light gray horizontal line.

Lloyd Kaufman
Vice President, Director of Materials Sciences

RTI Laboratories, Inc. - Analytical Report

WO#: 2307542

Date Reported: 8/11/2023

Original

Client: Sprinturf
Project: PFAS on 2 solids
Lab ID: 2307542-001
Client Sample ID: Foam, 1 of 2

Collection Date:

Matrix:

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Perfluorinated Compounds Solid Matrix LC/MS/MS		Method: DOD QSM5.3 B15			Analyst: DKS	
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonate (11Cl-PF3OYUdS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
1H,1H,2H,2H-Perfluorodecanesulfonate (8:2 FTS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
1H,1H,2H,2H-Perfluorohexanesulfonate (4:2 FTS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
1H,1H,2H,2H-Perfluorooctanesulfonate (6:2 FTS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate (9Cl-PF3ONS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Dodecafluoro-3H-4,8-dioxanonoate (ADONA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
HFPO-DA (GEN X)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorobutanesulfonic acid (PFBS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorobutanoic acid (PFBA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorodecanesulfonate (PFDS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorodecanoic acid (PFDA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorododecanoic acid (PFDoA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluoroheptanesulfonate (PFHpS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluoroheptanoic acid (PFHpA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorohexanesulfonic acid (PFHxS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorohexanoic acid (PFHxA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorononanesulfonate (PFNS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorononanoic acid (PFNA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorooctanesulfonic acid (PFOS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorooctanoic acid (PFOA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorooctansulfonamide (FOSA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluoropentanesulfonate (PFPeS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluoropentanoic acid (PFPeA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorotetradecanoic acid (PFTeDA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorotridecanoic acid (PFTrDA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluoroundecanoic acid (PFUdA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Surr: MFPBA	217	50-150	S	%Rec	1	8/11/2023 11:20 AM
Surr: M5PFPeA	166	50-150	S	%Rec	1	8/11/2023 11:20 AM
Surr: M3PFBS	115	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M2-4:2FTS	124	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M5PFHxA	65.3	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M3 GEN X	52.6	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M5PFHpA	65.7	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M3PFHxS	85.5	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M2-6:2FTS	52.3	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M8PFOA	90.2	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M9PFNA	88.2	50-150		%Rec	1	8/11/2023 11:20 AM

RTI Laboratories, Inc. - Analytical Report

WO#: 2307542

Date Reported: 8/11/2023
Original

Client: Sprinturf
Project: PFAS on 2 solids
Lab ID: 2307542-001
Client Sample ID: Foam, 1 of 2

Collection Date:

Matrix:

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Surr: M8PFOS	94.5	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M2-8:2FTS	48.5	50-150	S	%Rec	1	8/11/2023 11:20 AM
Surr: M6PFDA	120	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: D3-N-MeFOSAA	52.7	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: D5-N-EtFOSAA	65.2	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M7PFUdA	54.8	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M8FOSA	62.3	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: MPFDoA	57.5	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M2PFTeDA	40.6	50-150	S	%Rec	1	8/11/2023 11:20 AM

RTI Laboratories, Inc. - Analytical Report

WO#: 2307542

Date Reported: 8/11/2023

Original

Client: Sprinturf
 Project: PFAS on 2 solids
 Lab ID: 2307542-002
 Client Sample ID: Foam, 2 of 2

Collection Date:

Matrix:

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Perfluorinated Compounds Solid Matrix LC/MS/MS	Method: DOD QSM5.3 B15					Analyst: DKS
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonate (11Cl-PF3OYUdS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
1H,1H,2H,2H-Perfluorodecanesulfonate (8:2 FTS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
1H,1H,2H,2H-Perfluorohexanesulfonate (4:2 FTS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
1H,1H,2H,2H-Perfluorooctanesulfonate (6:2 FTS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate (9Cl-PF3ONS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Dodecafluoro-3H-4,8-dioxanonoate (ADONA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
HFPO-DA (GEN X)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
N-ethyl perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
N-methyl perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorobutanesulfonic acid (PFBS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorobutanoic acid (PFBA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorodecanesulfonate (PFDS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorodecanoic acid (PFDA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorododecanoic acid (PFDoA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluoroheptanesulfonate (PFHpS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluoroheptanoic acid (PFHpA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorohexanesulfonic acid (PFHxS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorohexanoic acid (PFHxA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorononanesulfonate (PFNS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorononanoic acid (PFNA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorooctanesulfonic acid (PFOS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorooctanoic acid (PFOA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorooctansulfonamide (FOSA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluoropentanesulfonate (PFPeS)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluoropentanoic acid (PFPeA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorotetradecanoic acid (PFTeDA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluorotridecanoic acid (PFTrDA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Perfluoroundecanoic acid (PFUdA)	ND	40000		ng/Kg	1	8/11/2023 11:20 AM
Surr: MFPBA	195	50-150	S	%Rec	1	8/11/2023 11:20 AM
Surr: M5PFPeA	146	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M3PFBS	123	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M2-4:2FTS	110	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M5PFHxA	68.5	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M3 GEN X	97.3	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M5PFHpA	70.6	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M3PFHxS	88.7	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M2-6:2FTS	58.6	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M8PFOA	86.4	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M9PFNA	76.2	50-150		%Rec	1	8/11/2023 11:20 AM

RTI Laboratories, Inc. - Analytical Report

WO#: 2307542

Date Reported: 8/11/2023
Original

Client: Sprinturf
Project: PFAS on 2 solids
Lab ID: 2307542-002
Client Sample ID: Foam, 2 of 2

Collection Date:

Matrix:

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Surr: M8PFOS	85.5	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M2-8:2FTS	77.0	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M6PFDA	145	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: D3-N-MeFOSAA	60.7	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: D5-N-EtFOSAA	82.8	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M7PFUdA	123	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M8FOSA	70.6	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: MPFDoA	99.7	50-150		%Rec	1	8/11/2023 11:20 AM
Surr: M2PFTeDA	24.9	50-150	S	%Rec	1	8/11/2023 11:20 AM

DEFINITIONS:

DF: Dilution factor; the dilution factor applied to the prepared sample.

DUP: Duplicate; aliquots of a sample taken from the same container under laboratory conditions and processed and analyzed independently, used to calculate Precision (%RPD).

LCS: Laboratory Control Sample; prepared by adding a known amount of target analytes to a specified amount of clean matrix and prepared with the batch of samples, used to calculate Accuracy (%REC).

LCSD: A duplicate LCS sample, used to calculate both Accuracy (%REC) and Precision (%RPD)

L+: LCS Failed High

L-: LCS Failed Low

MBLK: Method Blank; a sample of similar matrix that does not contain target analytes or interference that may impact the analytical results and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedure, used to assess and verify that the analytical process is free of contamination.

MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.

Mg/Kg or mg/L: Units of part per million (PPM) – milligram per Kilogram (W/W) or milligram per Liter (W/V).

MS: Matrix Spike; prepared by adding a known amount of target analytes to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available, used to calculate Accuracy (%REC)

MSD: A duplicate MS sample, used to calculate both Accuracy (%REC) and Precision (%RPD)

% REC: Percent Recovery of a known spike (SPK); a measure of accuracy expressed as a percentage of a measured (recovered) concentration compared to the known concentration (SPK) added to the sample. This is compared to the Low Limit and High Limit.

% RPD: Relative Percent Difference; a measure of precision expressed as a percentage of the difference between two duplicates relative to the average concentration. This is compared to the RPD Limit.

PL: Permit limit; Not included on all reports. Used primarily for wastewater discharge permits.

PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.

Qual: Qualifier that applies to the analyte reported

RL: Reporting Limit: See PQL

SPK: Spike; used in the QC section for both SPK Value and SPK Ref Val

Ug/Kg or ug/L: Units of part per billion (PPB) – microgram per Kilogram (W/W) or microgram per Liter (W/V).

QUALIFIERS:

*IX: Reported value exceeds the maximum allowed concentration by regulation or permit

B/v: Analyte detected in the associated Method Blank at a concentration > RL.

E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be considered estimated.

H/@: Holding time for preparation or analysis has been exceeded

J/n: Analyte concentration is reported, and is less than the PQL and greater than or equal to the established MDL. Greater uncertainty is associated with this result and data reported is estimated. These analytes are not routinely reviewed nor narrated as to their potential for being laboratory artifacts.

m/M: Manual Integration used to determine area response

ND/t: Analyte concentration is less than the Reporting Limit.

P: Second column RPD exceeds 40%

R: % RPD exceeds control limits

S/Q: % REC exceeds control limits

T: MBLK result is greater than 1/2 of the LOQ

U: The analyte concentration is less than the DL.

\: Laboratory Control Sample (LCS) recovery outside of acceptable range

/: Matrix Spike (MS) recovery outside of acceptable range

Y: CCV % REC exceeds control limits

Z: ICV % REC exceeds control limits