N60087_003864
BRUNSWICK_NAS
SSIC 5000-33c

# LABORATORY DATA PACKAGE, 18-0520, NAS BRUNSWICK ME

08/30/2018
BATTELLE

Approved for public release: distribution unlimited.

# CTO-WE21: Former Naval Air Station, Brunswick, Maine

# Project No 100122108-CTOWE21

# PFAS by DoD QSM 5.1 Table B-15

*QC*

*Batch 18-0520*

*Package DP-18-0234*

Submitted to:
Tetra Tech
661 Anderson Drive Foster Plaza 7
Pittsburgh, PA 15220 USA

Submitted by:
Battelle Norwell Operations
141 Longwater Drive Suite 202
Norwell, MA 02061

BATTELLE
It can be done

# CTO-WE21: Former Naval Air Station, Brunswick, Maine

# Project No 100122108-CTOWE21

# PFAS by DoD QSM 5.1 Table B-15

*QC*

*Batch 18-0520*

*Package DP-18-0234*

Submitted to:
Tetra Tech
661 Anderson Drive Foster Plaza 7
Pittsburgh, PA 15220 USA

NELAP Accreditation Number: E87856 (Florida Department of Health)

Submitted by:
Battelle Norwell Operations
141 Longwater Drive Suite 202
Norwell, MA 02061

| | | |
|---|---|---|
| Analyst Approval: | Denise Schumitz | schumitzd@battelle.org 2018.08.30 11:03:20 -04'00' |
| QC Chemist Approval: | Carla Devine | Digitally signed by devinec@battelle.org DN: cn=devinec@battelle.org Date: 2018.08.30 12:17:02 -04'00' |
| Project Manager Approval: | | Digitally signed by Jonathan Thorn Date: 2018.08.30 12:30:15 -04'00' |

BATTELLE
It can be done

# CTO-WE21: Former Naval Air Station, Brunswick, Maine

# Project No 100122108-CTOWE21

# PFAS by DoD QSM 5.1 Table B-15

*QC*

*Batch 18-0520*

*Package DP-18-0234*



BATTELLE

It can be done

Sample Summary

Client: Tetra Tech Inc.
SDG: 18-0520
Project/Site: Former Naval Air Station, Brunswick, Maine
CTO: WE21

| Lab Sample ID | Client Sample ID | Matrix | Collection Date | Receipt Date |
|---|---|---|---|---|
| CR635PB-FS | Procedural Blank | WATER | 8/22/2018 | 8/22/2018 |
| CR636LCS-FS | Laboratory Control Sample | WATER | 8/22/2018 | 8/22/2018 |
| J7401-FS | NASB-BLL15-GW-FB01-080918 | QC | 8/9/2018 | 8/10/2018 |

BATTELLE

**Signature Page**

Battelle 2018 (1 of 2)
Signature Page

| Name (Printed) | Signature | Initials | Date |
|---|---|---|---|
| Jonathan Thorn | | JRT | 4/4/2018 |
| Robert Lizotte, Jr. | | BL | 4.4.2018 |
| FRANCO PALA | | | 4-4-2018 |
| Carla Devine | | CRD | 4/4/18 |
| Denise Schumitz | | DMS | 4/4/18 |
| Candace Penn McCoy | | CPM | 4/4/2018 |
| Rich Rostucci | | RR | 4/4/2018 |
| Michael Mehta | | | 4/4/2018 |
| Christie Usher | | cu | 4/4/18 |
| Kevin McInerney | | | 4/4/18 |
| Stephanie Schultz | | SAS | 4/4/18 |
| Jordan Tower | | JCT | 4/4/18 |
| KRISTEN NICHOLS | | KN | 4/4/18 |
| Clinton H Brown | | CB | 4/4/18 |
| Matt Schumitz | | MS | 4-4-18 |
| Sam Guimaraes | | SG | 4-4-18 |
| Lauren Griffith | | | 4.4.18 |

BATTELLE

**Signature Page**

Battelle 2018 (2 of 2)
Signature Page

| Name (Printed) | Signature | Initials | Date |
|---|---|---|---|
| KAVITHA DASU | | KD | 04/04/18 |
| Kayla Lamarre | | KAL | 04/04/18 |
| Weidong Li | | W.L | 04/04/18 |
| Tracy W Stenner | | TWS | 04/04/18 |
| Ellyn M Fitch | | EMF | 12-April-2018 |
| Gail DeRuzzo | | GD | 4/18/18 |
| Zachary Willenberg | | ZJW | 4/20/18 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

# Work Plan

BATTELLE
It can be done

# WORK/QUALITY ASSURANCE PROJECT PLAN

## 1.0 GENERAL PROJECT INFORMATION

| | |
|---|---|
| **Project Title:** | CTO-WE21: Former Naval Air Station, Brunswick, Maine |
| **Project Number:** | 100122108-CTOWE21 |
| **Client:** | Tetra Tech<br>661 Anderson Drive Foster Plaza 7<br>Pittsburgh, PA 15220<br>USA |
| **Client Contact Information:** | Jeff Orient<br>Manager<br>(412) 921-8778(V)<br>NA<br>jeff.orient@tetratech.com |
| **Effective Date of QAPP:** | 8/10/2018 |
| **Version Number:** | 100122108-CTOWE21(L)-01 |
| **Project Manager:** | Thorn, Jonathan |
| **Laboratory Task Manager:** | Thorn, Jonathan |
| **Deliverable Due Date:** | 8/31/2018 |

## 2.0 SCOPE OF WORK

| | |
|---|---|
| **Overview:** | Analysis of groundwater samples for PFAS including PFBA. |
| **Matrix:** | Water |

### 2.1 TECHNICAL APPROACH

#### 2.1.1 Sample Receipt, Storage, and Handling

The list of samples for this project plan are presented in Attachment 1.

| | |
|---|---|
| **Storage Directions:** | Store sample refrigerated. |
| **Sub_Sampling:** | None |
| ***Procedures:*** | NA |
| ***Contact:*** | NA |
| ***Comment:*** | None. |
| **Archiving:** | Store samples for six months after delivery of final data. Notify client prior to disposal of remaining samples. |
| **Disposal:** | Dispose of samples in the appropriate waste stream. |

### 2.1.2 Sample Preparation

10 samples, including field reagent blank (FRB) samples. FRB samples will only be extracted if PFAS are detected in any field samples.

| Samples Expected: | Samples Per Batch: | Batches Expected: |
|---|---|---|
| 10 | 20 | 1 |

Batch quality control samples are defined in Table 1.

Target samples are presented in Attachment 1.

**Table 1: Quality Control Samples**

| *Type:* | *Description:* | *Count:* | *Rgt:* | *Reference:* | *Comment:* |
|---|---|---|---|---|---|
| PB | Laboratory control reagent blank. | 1 per batch | -- | NA | |
| LCS | Laboratory Control Sample | 1 per batch | No | NA | |
| MS | Spiked field sample for determining method accuracy in the presence of matrix. | 1 per batch | -- | NA | MS/MSD sample indicated on COC |
| MSD | Spiked field sample for determining method accuracy and precision in the presence of matrix. | 1 per batch | -- | NA | MS/MSD sample indicated on COC |

### 2.1.3 Extraction/Preparation

#### *2.1.3.1 Extraction*

| | |
|---|---|
| SOP No.-Rev: | **5-370-06** |
| SOP Title: | *Extraction of Poly and Perfluoroalkyl Substances from Environmental Matrices* |
| Sample Size: | 250 ml |
| SIS and LCS/MS Compounds: | Defined in Table 2. |
| Deviations: | None |
| Comments: | None |

**Table 2: SIS and LCS/MS Spiking Level**

| Standard Type | Standard Contents | Spike Amount (ng) | Volume (uL) | Comment |
|---|---|---|---|---|
| PFAS - DoD Low Level Labelled Extracted Internal Standards (SIS) | JY28 SIS | ~ 0.250 ng | 50 uL | NA |

| Standard Type | Standard Contents | | Spike Amount (ng) | Volume (uL) | Comment |
|---|---|---|---|---|---|
| PFAS - DoD Second Source LCS/MS Solution | JZ27 | LCS/MS | ~ 7.5 ng | 150 uL | NA |
| PFAS - DoD Second Source LCS/MS Solution | JZ27 | LCS/MS | ~ 2.50 ng | 50 uL | LCS only |

2.1.3.2 Cleanup

None.

RIS spiking levels are presented in Table 3.

Extract PIV (uL): 500

**Table 3: RIS Spiking Level**

| Standard Type | Standard Contents | | Spike Amount (ng) | Volume (uL) | Comment |
|---|---|---|---|---|---|
| PFAS - DoD Internal Standard Spiking Solution | JY26 | RIS | ~ 0.125 ng | 25 uL | NA |

### 2.1.4 Instrumental Analysis

The list of analytes along with data quality criteria are presented in Attachment 2.

**1)** SOP_No-Rev: **5-369-06**

SOP_Title: *Analysis of Perfluoroalkyl Substances in Environmental Samples by Liquid Chromatography and Tandem Mass Spectrometry (LC-MS/MS)*

Deviations: None

Comments: None

## 2.2. DELIVERABLES

| | |
|---|---|
| **Deliverables Due:** | 8/31/2018 |
| **LIMS Reports:** | *No* |
| **Histograms:** | *No* |
| **Excel Tables:** | *Yes* |
| **EICs:** | *No* |

BATTELLE
It can be done

# WORK/QUALITY ASSURANCE PROJECT PLAN

| | |
|---|---|
| **Chromatograms:** | *No* |
| **EDDs:** | *Yes* |
| **Comments:** | • Full validation package compliant with QSM 5.1 Table B-15<br>• Tetra Tech EDD format |

## 3.0 QUALITY

The Method Quality Objectives are defined in Attachment 3.

## 4.0 ORGANIZATION AND COMMUNICATION

### 4.1 ORGANIZATION

The project team is defined in Table 4. Supervisors may make substitutions with Project Manager concurrence.

**Table 4: Project Team and Roles**

| Staff Member | Role | Comment |
|---|---|---|
| Jonathan R. Thorn | Project Manager | NA |
| Stephanie A. Schultz | Sample Preparation | NA |
| Lauren M. Griffith | LC-MS/MS Analysis | NA |
| Denise M. Schumitz | Sample Custody | NA |
| Carla R. Devine | Quality Control Officer | NA |
| Zachary J. Willenberg | Quality Assurance Officer | NA |

### 4.2 COMMUNICATION

A kick-off meeting will be held to discuss project scope and goals.

## 5.0 SCHEDULE

The project schedule is presented in Table 5.

**Table 5. Schedule of Laboratory Activities**

| Activity: | Start Date: | End Date: | TAT (days): | Comment: |
|---|---|---|---|---|
| Sample Receipt | 08/10/2018 | 08/10/2018 | 0 | NA |
| Sample Preparation | 08/10/2018 | 08/14/2018 | 4 | NA |
| Instrument Analysis | 08/14/2018 | 08/24/2018 | 10 | NA |

BATTELLE
It can be done

## WORK/QUALITY ASSURANCE PROJECT PLAN

| Activity: | Start Date: | End Date: | TAT (days): | Comment: |
|---|---|---|---|---|
| Quality Control Review | 08/24/2018 | 08/29/2018 | 5 | NA |
| Final Data Reporting | 08/31/2018 | 08/31/2018 | 0 | NA |
| Quality Assurance Review | 08/29/2018 | 08/31/2018 | 2 | NA |

### 6.0 BUDGET

The labor budget for the analytical task is presented in Table 6.

**Table 6. Labor Budget (Laboratory Analytical Task)**

| Labor Activity: | Hours/ Batch: | Batches: | Total Hours: | Comment: |
|---|---|---|---|---|
| Sample Receipt | 2 | 1 | 2 | Hours based on batch of 20 samples. |
| Sample Preparation | 8 | 1 | 8 | NA |
| Instrument Analysis | 8 | 1 | 8 | NA |
| Quality Control Review | 3 | 1 | 3 | NA |
| Final Data Reporting | 1 | 1 | 1 | NA |
| Quality Assurance Review | 1 | 1 | 1 | NA |

### 7.0 STAFF DEVELOPMENT

None anticipated.

BATTELLE
It can be done

# WORK/QUALITY ASSURANCE PROJECT PLAN

## Attachment 1: Target Samples

**Shipment:** **SHP-180810-03**

**Status:** Pending

**Description:** Nas Brunswick

**Range:** J7394-J7402

**Comment:** NA

| No: | BDO Id: | Client Sample ID: | Collection Date: | Matrix: | Storage Facility: Location: No: | Comments: |
|---|---|---|---|---|---|---|
| 1 | J7394 | NASB-CCC-GW-01-0818 | 08/08/2018 3:12 pm | GW | R0119 (NA) | |
| 2 | J7395 | NASB-CCC-GW-02-0818 | 08/08/2018 4:06 pm | GW | R0119 (NA) | |
| 3 | J7396 | NASB-BLL15-GW-02-0818 | 08/09/2018 8:37 am | GW | R0119 (NA) | |
| 4 | J7397 | NASB-BLL15-GW-01-0818 | 08/09/2018 9:40 am | GW | R0119 (NA) | |
| 5 | J7398 | NASB-BLL15-DUP-080918 | 08/09/2018 9:45 am | GW | R0119 (NA) | |
| 6 | J7399 | NASB-BLL15-GW-03-0818 | 08/09/2018 10:54 am | GW | R0119 (NA) | |
| 7 | J7400 | NASB-BLL15-GW-04-0818 | 08/09/2018 12:16 pm | GW | R0119 (NA) | |
| 8 | J7401 | NASB-BLL15-GW-FB01-080918 | 08/09/2018 2:00 pm | GW | R0119 (NA) | |
| 9 | J7402 | NASB-BLL15-GW-RB01-080918 | 08/09/2018 2:15 pm | GW | R0119 (NA) | |

BATTELLE
It can be done

# WORK/QUALITY ASSURANCE PROJECT PLAN

## Attachment 2: Test Codes

| | |
|---|---|
| **Project Test Code Name:** | Master_369 |
| **SOP Reference:** | 5-369 - Analysis of Perfluoroalkyl Substances in Environmental Samples by Liquid Chromatography and Tandem Mass Spectrometry (LC-MS/MS) |
| **Description:** | PFAS by DoD QSM 5.1 Table B-15 |
| **Matrix:** | L - Liquid Samples, like water or sea water, prepared and anlyzed under the same class of detection limits. |
| **Detection Limit Study:** | 5-369 |
| **Instrument:** | LC-MS/MS |
| **MQO Criteria** | Universal_LC |
| **Standard Report:** | Standard Result Report |

| Method Specific Reporting | | | | Holding Times (days) | | Data Flags | |
|---|---|---|---|---|---|---|---|
| ***Result Units:*** | ng/L | ***Unit Conversion:*** | (none) | ***Sample:*** | 14 | ***DL_Flag:*** | U |
| ***Weight Basis:*** | LIQUID | ***Result Format:*** | Fixed Digits | ***Frozen:*** | 14 | ***RL_Flag:*** | J |
| ***Standard Basis:*** | SIS | ***# of Figures/Digits:*** | 2 | ***Extract:*** | 28 | ***PB_Flag:*** | B |
| ***Oil Weight Basis:*** | No | ***Oil Weight Source:*** | Oil Weight | | | ***DIL_Flag:*** | D |
| ***U-Value Substition:*** | U-Flag=MD | ***Histograms:*** | No | | | ***HT_Flag:*** | T |
| ***ECD_Reporting:*** | No | | | | | | |

| No: | Analyte: | Report Name: | Type | RIS | SIS | Hidden: | Graph: |
|---|---|---|---|---|---|---|---|
| 1 | Perfluoro-n-butanoic Acid | PFBA | T | | 13C4-PFBA | No | No |
| 2 | Perfluoro-n-hexanoic acid | PFHxA | T | | 13C5-PFHxA | No | No |
| 3 | Perfluoro-n-heptanoic Acid | PFHpA | T | | 13C4-PFHpA | No | No |
| 4 | Perfluoro-n-octanoic Acid | PFOA | T | | 13C8-PFOA | No | No |
| 5 | Perfluorononanoic Acid | PFNA | T | | 13C9-PFNA | No | No |
| 6 | Perfluoro-n-decanoic Acid | PFDA | T | | 13C6-PFDA | No | No |
| 7 | Perfluoro-n-undecanoic acid | PFUnA | T | | 13C7-PFUnA | No | No |
| 8 | Perfluoro-n-dodecanoic acid | PFDoA | T | | 13C2-PFDoA | No | No |
| 9 | Perfluoro-n-tridecanoic acid | PFTrDA | T | | 13C2-PFTeDA | No | No |
| 10 | Perfluoro-n-tetradecanoic acid | PFTeDA | T | | 13C2-PFTeDA | No | No |
| 11 | N-methylperfluoro-1-octanesulfonamidoacetic acid | NMeFOSAA | T | | d3-MeFOSAA | No | No |
| 12 | N-ethylperfluoro-octanesulfonamidoacetic acid | NEtFOSAA | T | | d5-EtFOSAA | No | No |
| 13 | Perfluoro-1-butanesulfonate | PFBS | T | | 13C3-PFBS | No | No |
| 14 | Perfluoro-1-hexanesulfonate | PFHxS | T | | 13C3-PFHxS | No | No |
| 15 | Perfluoro-1-octanesulfonate | PFOS | T | | 13C8-PFOS | No | No |
| 1 | 13C4-PFBA | 13C4-PFBA | SIS | 13C3-PFBA | | No | No |
| 2 | 13C5-PFHxA | 13C5-PFHxA | SIS | 13C2-PFOA | | No | No |
| 3 | 13C4-PFHpA | 13C4-PFHpA | SIS | 13C2-PFOA | | No | No |

BATTELLE
It can be done

# WORK/QUALITY ASSURANCE PROJECT PLAN

## Attachment 2: Test Codes

**Project Test Code Name:** Master_369

| No: | Analyte: | Report Name: | Type | RIS | SIS | Hidden: | Graph: |
|---|---|---|---|---|---|---|---|
| 4 | 13C8-PFOA | 13C8-PFOA | SIS | 13C2-PFOA | | No | No |
| 5 | 13C9-PFNA | 13C9-PFNA | SIS | 13C2-PFOA | | No | No |
| 6 | 13C6-PFDA | 13C6-PFDA | SIS | 13C2-PFDA | | No | No |
| 7 | 13C7-PFUnA | 13C7-PFUnA | SIS | 13C2-PFDA | | No | No |
| 8 | 13C2-PFDoA | 13C2-PFDoA | SIS | 13C2-PFDA | | No | No |
| 9 | 13C2-PFTeDA | 13C2-PFTeDA | SIS | 13C2-PFDA | | No | No |
| 10 | d3-MeFOSAA | d3-MeFOSAA | SIS | 13C4-PFOS | | No | No |
| 11 | d5-EtFOSAA | d5-EtFOSAA | SIS | 13C4-PFOS | | No | No |
| 12 | 13C3-PFBS | 13C3-PFBS | SIS | 13C4-PFOS | | No | No |
| 13 | 13C3-PFHxS | 13C3-PFHxS | SIS | 13C4-PFOS | | No | No |
| 14 | 13C8-PFOS | 13C8-PFOS | SIS | 13C4-PFOS | | No | No |

**Total Analytes:** 29

**Subtract Peaks:**

None

**Sum Peaks:**

None

BATTELLE
It can be done

# WORK/QUALITY ASSURANCE PROJECT PLAN

## Attachment 2: Test Codes

**Project Test Code Name:** Master_369

**ICAL Acceptance Criteria:**

| Curve Fit: | Limit Mean(%): | Mean Qual: | Limit Ind.: | Ind. Qual: | Min Points: | Points Qual: | Comments: |
|---|---|---|---|---|---|---|---|
| Linear | NA | NA | 0.99 | N | 5 | N | y = Bx + C |
| Quadratic | NA | NA | 0.99 | N | 6 | N | y = Ax^2 + Bx + C |

**Continuing Calibration Verification Criteria:**

**CCV Name: 5-369**

| Frequency Hrs: | | Mean PD(%): | | Individual PD(%): | | RIS/SIS RT Window (min): | | Area Limit Low(%): | Area Limit High(%): | | Comment: |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | (N) | 30 | (N) | 30 | (N) | 0.04 | (N) | -50 | 100 | (N) | NA |

**Independent Calibration Verification:**

**ICC Name:** 5-369

| Mean PD Limit(%): | | Ind. PD Limit(%): | | RIS/SIS Window Limit (Secs): | | Area Limit High(%): | Area Limit Low(%): | | Comment: |
|---|---|---|---|---|---|---|---|---|---|
| 30 | (N) | 30 | (N) | 0.04 | (N) | -50 | 100 | (N) | NA |

**Mass Discrimination Criteria:**

***None***

**Degredation Check Criteria:**

***None***

BATTELLE
It can be done

# WORK/QUALITY ASSURANCE PROJECT PLAN

## Attachment 3: Method Quality Objectives

| **MQO Application** | ***Universal_LC*** | | |
|---|---|---|---|
| **MQO:** | **Acceptance Criteria** | **Qual:** | **Corrective Action:** |
| Procedural Blank | Samples must be greater than five times the blank concentration (>5xPB). | B | Review with Project Manager; re-analyze or justify results in project records. |
| PB Measurement Quality Objective | Organic results in the Procedural Blank are less than 1/2 times the LOQ (<1/2xLOQ) | N | Review with Project Manager; re-analyze or justify results in project records. |
| Laboratory Control Sample | Recovery values 70-130%. | N | Review with project manager; re-analyze or justify reporting the results in project records. |
| Matrix Spike / Matrix Spike Duplicate Recovery | Organics 70-130%. Analyte concentration in MS/MSD must be greater than five times reported background concentration. | N | Review with Project Manager; re-analyze or justify reporting results in the project records. |
| | Organics Results in the Target is less than 5 times the Original | n | |
| Matrix Spike/Spike Duplicate Precision | Organics results less than 30% Relative Percent Difference (RPD). Analyte concentration in MS/MSD must be greater than five times reported background concentration. | N | Review with Project Manager; re-analyze or justify reporting results in the project records. |
| | Organics Results in the Target is less than 5 times the Original | n | |
| Standard Reference Material Accuracy | Organics Percent Difference less than 30% from a range of certified values on average. Analyte concentration must be greater than five times the Method Detection Limit (>5xMDL). | N | Review with Project Manager; re-analyze or justify reporting results in the project records. |
| | Organics Results in the Target is less than 5 times the MDL | n | |
| Analytical Duplicate Precision | Organics results less than 30% Relative Percent Difference (RPD). Analyte concentration must be > 5x MDL. | N | Review with Project Manager; re-analyze or justify reporting results in the project records. |
| | Organics Results in the Original is less than 5 times the MDL | n | |

BATTELLE
It can be done

# WORK/QUALITY ASSURANCE PROJECT PLAN

## Attachment 3: Method Quality Objectives

| **MQO Application** | ***Universal_LC*** | | |
|---|---|---|---|
| **MQO:** | **Acceptance Criteria** | **Qual:** | **Corrective Action:** |
| Analytical Triplicate Precision | Organics results less than 30% Relative Standard Deviation (RSD). Analyte concentration must be > 5x MDL. | N | Review with Project Manager; re-analyze or justify reporting results in the project records. |
| | Organics Results in the Original is less than 5 times the MDL | n | |
| Surrogate Compound Recovery | Recovery results between 50% and 150%. | N | Review with Project Manager; re-analyze or justify reporting results in the project records. |
| Control Oil | RPD < 30% for at least 90% of analytes | N | Results examined by project manager, task leader, or subcontractor lab manager. Reextraction, reanalysis, or justification documented. |
| Instrument Calibration | 5-369-6: R-squared greater than or equal to 0.990 | | Results examined by project manager, task leader, or subcontractor lab manager. Reextraction, reanalysis, or justification documented. |
| Independent Calibration Check Solution | 5-369-6: Individual PD less than or equal to 30%. Mean Percent Difference less than or equal to 30%. | N | Review with Project Manager; re-analyze or justify in project records. |
| Continuing Calibration Verification | 5-369-6: Individual PD less than or equal to 30%. Mean Percent Difference less than or equal to 30%. | N | Review with Project Manager; re-analyze or justify in project records. |

BATTELLE
It can be done

**ShpNo** SHP-180810-03

**Battelle Project No:** 8-CTOWE21

# Sample Receipt Form

**Approved:** ☐ **Authorized** ☐

**Project Number:** 112G08005-WE21 **Client:** Tetra Tech

**Received by:** Schumitz, Matt **Date/Time Received:** Friday, August 10, 2018 10:30 AM

**No. of Shipping Containers:** 1

## SHIPMENT

**Method of Delivery:** Commercial Carrier **Tracking Number:** 8111 8554 2137

**COC Forms:** ☑ **Shipped with samples** ☐ **No Forms**

## Cooler(s)/Box(es)

| Cntr | Type | Tracking No. | Seal | Seal | Container | Therm. | Temp C | Smps |
|---|---|---|---|---|---|---|---|---|
| 1 of 1 | Cooler | 8111 8554 2137 | Custody Seals | Intact | Intact | Therm_1 | 0.9 | 9 |

## Samples

**Sample Labels:**
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

**Container Seals:**
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

**Condition of Samples:**
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

**Temperature upon receipt (°C):** 0.9 Temperature Blank used ☑ Yes ☐ No
*(Note: If temperature upon receipt differs from required conditions, see sample log comment field)*

**Samples Acidified:** ☐ Yes ☐ No ☑ Unknown

**Initial pH 5-9?:** ☐ Yes ☐ No ☑ NA
*If no, individual sample adjustments on the Auxiliary Sample Receipt Form*

**Total Residual Chlorine Present?:** ☐ Yes ☐ No ☑ NA
*If yes, individual sample adjustments on the Auxiliary Sample Receipt Form*

**Head Space <1% in samples for water VOC analysis:** ☐ Yes ☐ No ☑ NA
*Individual sample deviations noted on sample log*

**Samples Containers:**
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: Unknown

**Storage Location:** Custody: Refrigerator - R0119 (NA) **BDO IDs Assigned:** J7394 - J7402

**Samples logged in by:** Schumitz, Matt **Date/Time:** 08/10/2018 10:30 AM

**Approved By:** **Approved On:**

**Authorized By:** **Authorized On:**

BATTELLE
It can be done

**ShpNo** SHP-180810-03

**Battelle Project No:** 8-CTOWE21

# Sample Receipt Form Details

**Approved:** ☐ **Authorized** ☐

**Project Number:** 112G08005-WE21 **Client:** Tetra Tech

**Received by:** Schumitz, Matt **Date/Time Received:** Friday, August 10, 2018 10:30 AM

**No. of Shipping Containers:** 1

| BDO Id: | Client Sample ID: | Collection Date: | Login Date: | Ctrs: | Matrix: | Temp: | pH: | TRC: | VOC: | Stored In: | Loc: | No: | Comments: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J7394 | NASB-CCC-GW-01-0818 | 08/08/18 15:12 | 08/10/18 11:26 | 2 | GW | 0.9 | NA | NA | NA | R0119 (NA) | | | |
| J7395 | NASB-CCC-GW-02-0818 | 08/08/18 16:06 | 08/10/18 11:26 | 2 | GW | 0.9 | NA | NA | NA | R0119 (NA) | | | |
| J7396 | NASB-BLL15-GW-02-0818 | 08/09/18 8:37 | 08/10/18 11:27 | 2 | GW | 0.9 | NA | NA | NA | R0119 (NA) | | | |
| J7397 | NASB-BLL15-GW-01-0818 | 08/09/18 9:40 | 08/10/18 11:27 | 6 | GW | 0.9 | NA | NA | NA | R0119 (NA) | | | |
| J7398 | NASB-BLL15-DUP-080918 | 08/09/18 9:45 | 08/10/18 11:27 | 2 | GW | 0.9 | NA | NA | NA | R0119 (NA) | | | |
| J7399 | NASB-BLL15-GW-03-0818 | 08/09/18 10:54 | 08/10/18 11:28 | 2 | GW | 0.9 | NA | NA | NA | R0119 (NA) | | | |
| J7400 | NASB-BLL15-GW-04-0818 | 08/09/18 12:16 | 08/10/18 11:28 | 2 | GW | 0.9 | NA | NA | NA | R0119 (NA) | | | |
| J7401 | NASB-BLL15-GW-FB01-080918 | 08/09/18 14:00 | 08/10/18 11:28 | 2 | QC | 0.9 | NA | NA | NA | R0119 (NA) | | | |
| J7402 | NASB-BLL15-GW-RB01-080918 | 08/09/18 14:15 | 08/10/18 11:29 | 2 | QC | 0.9 | NA | NA | NA | R0119 (NA) | | | |

**Total Samples:** 9

Tetra Tech, Inc.

# CHAIN OF CUSTODY | NUMBER No. 0603 | PAGE 1 of 1

| | | | | |
|---|---|---|---|---|
| PROJECT NO: 112G0800SWF21 | FACILITY: NAS BRUNSWICK | PROJECT MANAGER JEFF ORIENT | PHONE NUMBER 412-921-7080 | LABORATORY NAME AND CONTACT: 781-681-5588 BATTELLE JON THORN |
| SAMPLERS (SIGNATURE) Fred Ramser | | FIELD OPERATIONS LEADER FRED W. RAMSER | PHONE NUMBER 412-921-8838 | ADDRESS 141 LONGWATER DR, SUITE 202 |
| | | CARRIER/WAYBILL NUMBER FED EX 8111 8554 2137 | | CITY, STATE NORWELL, MA 02061 |

STANDARD TAT [X]
RUSH TAT [ ]
[ ] 24 hr. [ ] 48 hr. [ ] 72 hr. [ ] 7 day [ ] 14 day

| DATE (YEAR 2018) | TIME | SAMPLE ID | LOCATION ID | TOP DEPTH (FT) | BOTTOM DEPTH (FT) | MATRIX (GW, SO, SW, SD, QC, ETC.) | COLLECTION METHOD GRAB (G) COMP (C) | No. OF CONTAINERS | TYPE OF ANALYSIS: PFAS | | | CONTAINER TYPE: PLASTIC (P) or GLASS (G): P | PRESERVATIVE USED: NONE | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8/8 | 1512 | NASB-CCC-GW-01-0818 | CC MW01 | — | — | GW | G | 2 | ✓ | | J7394 | | | | | | |
| 8/8 | 1606 | NASB-CCC-GW-02-0818 | CC MW02 | — | — | GW | G | 2 | ✓ | | J7395 | | | | | | |
| 8/9 | 0837 | NASB-BLL15-GW-02-0818 | BLL15 MW02 | — | — | GW | G | 2 | ✓ | | J7396 | | | | | | |
| 8/9 | 0940 | NASB-BLL15-GW-01-0818 | BLL15 MW01 | — | — | GW | G | 6† | ✓ | | J7397 | | | | | | * RUN MS/MSD |
| 8/9 | 0945 | NASB-BLL15-DUP-080918 | — | — | — | GW | G | 2 | ✓ | | J7398 | | | | | | |
| 8/9 | 1054 | NASB-BLL15-GW-03-0818 | BLL15 MW03 | — | — | GW | G | 2 | ✓ | | J7399 | | | | | | |
| 8/9 | 1216 | NASB-BLL15-GW-04-0818 | BLL15 MW04 | — | — | GW | G | 2 | ✓ | | J7400 | | | | | | |
| 8/9 | 1400 | NASB-BLL15-GW-FB01-080918 | QC | — | — | QC | G | 2 | ✓ | | J7401 | | | | | | |
| 8/9 | 1415 | NASB-BLL15-GW-RB01-080918 | QC | — | — | QC | G | 2 | ✓ | | J7402 | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 1. RELINQUISHED BY: Fred Ramser | DATE 8-9-18 | TIME 1630 | 1. RECEIVED BY FED EX | DATE | TIME |
| 2. RELINQUISHED BY | DATE | TIME | 2. RECEIVED BY Battelle | DATE 8-10-18 | TIME 1030 |
| 3. RELINQUISHED BY | DATE | TIME | 3. RECEIVED BY | DATE | TIME |

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)


FRI - 10 AUG 10:30
TRK# 0215 8111 8554 2137 PRIORITY OVERNIGH
02061
MA-US
XE XPUA
BOS
5224795 09Aug 23:58 MEMH 547C1/07F5/A17C
Therm-1
0.9

# Data Tables

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

| | | | | |
|---|---|---|---|---|
| Client ID | NASB-BLL15-GW-FB01-080918 | | | |
| Battelle ID | J7401-FS | | | |
| Sample Type | SA | | | |
| Collection Date | 08/09/2018 | | | |
| Extraction Date | 08/22/2018 | | | |
| Analysis Date | 08/25/2018 | | | |
| Analytical Instrument | Sciex 5500 LC/MS/MS | | | |
| % Moisture | NA | | | |
| Matrix | QC | | | |
| Sample Size | 0.265 | | | |
| Size Unit-Basis | L | | | |
| Units | ng/L | MDL | LOD | LOQ |
| PFBA | 2.31 J | 0.13 | 0.47 | 4.72 |
| PFHxA | 0.47 U | 0.18 | 0.47 | 4.72 |
| PFHpA | 0.47 U | 0.15 | 0.47 | 4.72 |
| PFOA | 1.28 J | 0.17 | 0.47 | 4.72 |
| PFNA | 0.94 U | 0.25 | 0.94 | 4.72 |
| PFDA | 0.47 U | 0.15 | 0.47 | 4.72 |
| PFUnA | 0.94 U | 0.27 | 0.94 | 4.72 |
| PFDoA | 0.47 U | 0.17 | 0.47 | 4.72 |
| PFTrDA | 0.47 U | 0.14 | 0.47 | 4.72 |
| PFTeDA | 0.94 U | 0.24 | 0.94 | 4.72 |
| NMeFOSAA | 1.89 U | 0.53 | 1.89 | 4.72 |
| NEtFOSAA | 0.94 U | 0.46 | 0.94 | 4.72 |
| PFBS | 0.47 U | 0.12 | 0.47 | 4.72 |
| PFHxS | 0.38 U | 0.10 | 0.38 | 4.72 |
| PFOS | 0.47 U | 0.18 | 0.47 | 4.72 |

***Surrogate Recoveries (%)***

| | |
|---|---|
| 13C4-PFBA | 53 |
| 13C5-PFHxA | 52 |
| 13C4-PFHpA | 54 |
| 13C8-PFOA | 56 |
| 13C9-PFNA | 51 |
| 13C6-PFDA | 59 |
| 13C7-PFUnA | 57 |
| 13C2-PFDoA | 54 |
| 13C2-PFTeDA | 51 |
| d3-MeFOSAA | 52 |
| d5-EtFOSAA | 55 |
| 13C3-PFBS | 57 |
| 13C3-PFHxS | 57 |
| 13C8-PFOS | 59 |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

| Client ID | JY46 IB | | | |
|---|---|---|---|---|
| Battelle ID | JY46 IB_08/24/2018 | | | |
| Sample Type | IB | | | |
| Collection Date | NA | | | |
| Extraction Date | NA | | | |
| Analysis Date | 08/24/2018 | | | |
| Analytical Instrument | Sciex 5500 LC/MS/MS | | | |
| % Moisture | NA | | | |
| Matrix | Water | | | |
| Sample Size | 0.250 | | | |
| Size Unit-Basis | NA | | | |
| Units | ng/L | MDL | LOD | LOQ |
| PFBA | 0.50 U | 0.14 | 0.50 | 5.00 |
| PFHxA | 0.50 U | 0.19 | 0.50 | 5.00 |
| PFHpA | 0.50 U | 0.16 | 0.50 | 5.00 |
| PFOA | 0.50 U | 0.18 | 0.50 | 5.00 |
| PFNA | 1.00 U | 0.26 | 1.00 | 5.00 |
| PFDA | 0.50 U | 0.16 | 0.50 | 5.00 |
| PFUnA | 1.00 U | 0.29 | 1.00 | 5.00 |
| PFDoA | 0.50 U | 0.18 | 0.50 | 5.00 |
| PFTrDA | 0.50 U | 0.15 | 0.50 | 5.00 |
| PFTeDA | 1.00 U | 0.25 | 1.00 | 5.00 |
| NMeFOSAA | 2.00 U | 0.56 | 2.00 | 5.00 |
| NEtFOSAA | 1.00 U | 0.49 | 1.00 | 5.00 |
| PFBS | 0.50 U | 0.13 | 0.50 | 5.00 |
| PFHxS | 0.40 U | 0.11 | 0.40 | 5.00 |
| PFOS | 0.50 U | 0.19 | 0.50 | 5.00 |
| ***Surrogate Recoveries (%)*** | | | | |
| 13C4-PFBA | 103 | | | |
| 13C5-PFHxA | 101 | | | |
| 13C4-PFHpA | 100 | | | |
| 13C8-PFOA | 106 | | | |
| 13C9-PFNA | 99 | | | |
| 13C6-PFDA | 111 | | | |
| 13C7-PFUnA | 103 | | | |
| 13C2-PFDoA | 108 | | | |
| 13C2-PFTeDA | 99 | | | |
| d3-MeFOSAA | 101 | | | |
| d5-EtFOSAA | 123 | | | |
| 13C3-PFBS | 100 | | | |
| 13C3-PFHxS | 99 | | | |
| 13C8-PFOS | 103 | | | |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

| Client ID | Procedural Blank | | | |
|---|---|---|---|---|
| Battelle ID | CR635PB-FS | | | |
| Sample Type | PB | | | |
| Collection Date | 08/22/2018 | | | |
| Extraction Date | 08/22/2018 | | | |
| Analysis Date | 08/25/2018 | | | |
| Analytical Instrument | Sciex 5500 LC/MS/MS | | | |
| % Moisture | NA | | | |
| Matrix | WATER | | | |
| Sample Size | 0.250 | | | |
| Size Unit-Basis | L | | | |
| Units | ng/L | MDL | LOD | LOQ |
| PFBA | 0.98 J | 0.14 | 0.50 | 5.00 |
| PFHxA | 0.50 U | 0.19 | 0.50 | 5.00 |
| PFHpA | 0.50 U | 0.16 | 0.50 | 5.00 |
| PFOA | 1.27 J | 0.18 | 0.50 | 5.00 |
| PFNA | 1.00 U | 0.26 | 1.00 | 5.00 |
| PFDA | 0.50 U | 0.16 | 0.50 | 5.00 |
| PFUnA | 1.00 U | 0.29 | 1.00 | 5.00 |
| PFDoA | 0.50 U | 0.18 | 0.50 | 5.00 |
| PFTrDA | 0.50 U | 0.15 | 0.50 | 5.00 |
| PFTeDA | 1.00 U | 0.25 | 1.00 | 5.00 |
| NMeFOSAA | 2.00 U | 0.56 | 2.00 | 5.00 |
| NEtFOSAA | 1.00 U | 0.49 | 1.00 | 5.00 |
| PFBS | 0.50 U | 0.13 | 0.50 | 5.00 |
| PFHxS | 0.40 U | 0.11 | 0.40 | 5.00 |
| PFOS | 0.21 J | 0.19 | 0.50 | 5.00 |

***Surrogate Recoveries (%)***

| | |
|---|---|
| 13C4-PFBA | 68 |
| 13C5-PFHxA | 84 |
| 13C4-PFHpA | 83 |
| 13C8-PFOA | 79 |
| 13C9-PFNA | 85 |
| 13C6-PFDA | 81 |
| 13C7-PFUnA | 76 |
| 13C2-PFDoA | 76 |
| 13C2-PFTeDA | 76 |
| d3-MeFOSAA | 79 |
| d5-EtFOSAA | 79 |
| 13C3-PFBS | 88 |
| 13C3-PFHxS | 88 |
| 13C8-PFOS | 86 |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

| Client ID | Laboratory Control Sample | | | | | |
|---|---|---|---|---|---|---|
| Battelle ID | CR636LCS-FS | | | | | |
| Sample Type | LCS | | | | | |
| Collection Date | 08/22/2018 | | | | | |
| Extraction Date | 08/22/2018 | | | | | |
| Analysis Date | 08/25/2018 | | | | | |
| Analytical Instrument | Sciex 5500 LC/MS/MS | | | | | |
| % Moisture | NA | | | | | |
| Matrix | WATER | | | | | |
| Sample Size | 0.250 | | | | | |
| Size Unit-Basis | L | | | | Control Limits | |
| Units | ng/L | Target | Recovery | Qual | Lower | Upper |
| PFBA | 12.36 | 10.00 | 124 | | 61 | 139 |
| PFHxA | 10.45 | 10.10 | 103 | | 51 | 137 |
| PFHpA | 10.26 | 10.00 | 103 | | 48 | 136 |
| PFOA | 11.43 B | 10.00 | 114 | | 49 | 141 |
| PFNA | 10.84 | 10.00 | 108 | | 58 | 122 |
| PFDA | 10.35 | 10.00 | 104 | | 59 | 135 |
| PFUnA | 9.54 | 10.00 | 95 | | 64 | 134 |
| PFDoA | 10.87 | 10.00 | 109 | | 75 | 131 |
| PFTrDA | 11.83 | 10.00 | 118 | | 42 | 148 |
| PFTeDA | 11.14 | 10.00 | 111 | | 42 | 158 |
| NMeFOSAA | 11.81 | 10.00 | 118 | | 50 | 146 |
| NEtFOSAA | 11.31 | 10.00 | 113 | | 51 | 131 |
| PFBS | 10.38 | 10.10 | 103 | | 56 | 134 |
| PFHxS | 10.50 | 10.10 | 104 | | 52 | 128 |
| PFOS | 10.76 | 10.00 | 108 | | 40 | 144 |

***Surrogate Recoveries (%)***

| | |
|---|---|
| 13C4-PFBA | 75 |
| 13C5-PFHxA | 85 |
| 13C4-PFHpA | 94 |
| 13C8-PFOA | 88 |
| 13C9-PFNA | 87 |
| 13C6-PFDA | 84 |
| 13C7-PFUnA | 86 |
| 13C2-PFDoA | 83 |
| 13C2-PFTeDA | 78 |
| d3-MeFOSAA | 92 |
| d5-EtFOSAA | 82 |
| 13C3-PFBS | 95 |
| 13C3-PFHxS | 92 |
| 13C8-PFOS | 92 |

BATTELLE
It can be done

Glossary of Data Qualifiers

| Flag: | Application: |
|---|---|
| B | Analyte found in the sample at a concentration <10x the level found in the procedural blank |
| D | Dilution Run. Initial run outside the initial calibration range of the instrument |
| E | Estimate, result is greater than the highers concentration level in the calibration |
| H | Surrogate diluted out. Used when surrogate recovery is affected by excessive dilution of the sample extract. |
| J | Analyte detected below the Limit of Quantitation (LOQ) |
| ME | Significant Matrix Interference - Estimated value. |
| MI | Significant Matrix Interference - value could not be determined. |
| n | Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO), but meets secondary criteria |
| N | Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO) |
| NA | Not Applicable |
| T | Holding Time (HT) exceeded |
| U | Analyte not detected or detected below the Method detection limit (MDL) value, Limit of Detection (LOD) reported |

# Miscellaneous Documentation

# QA/QC Summary
# Batch 18-0520

| | |
|---|---|
| Project: | CTO-WE21: Former Naval Air Station, Brunswick, Maine |
| Parameters: | PFAS |
| Laboratory: | Battelle, Norwell, MA |
| Matrix: | QC |
| Data Set: | DP-18-0234 |
| Analytical SOP: | 5-369 |
| Method Reference: | PFAS to QSM 5.1 Table B-15 |

| Sample Custody | | |
|---|---|---|
| Collection Date | Receipt Date | Temp (°C) |
| 8/9/2018 | 8/10/2018 | 0.9 |
| Corrective Actions | None. | |
| Sample Storage | The water samples were stored refrigerated until extraction. | |
| Related samples | This FRB sample is related to the field samples in SDG 18-0500. | |

| | METHOD SUMMARIES |
|---|---|
| Sample Preparation | Water samples were spiked with surrogates in the original sample container from the field. The water was extracted using a weak ion exchange solid phase extraction (SPE) cartridge and eluted from the SPE with 0.4% $NH_3$ in methanol. Extracts were split and concentrated to dryness under nitrogen with a water bath set between 35 °C and 45 °C, reconstituted with 80:20 methanol/water (V/V) and fortified with internal standard. Extracts were transferred for LC-MS/MS analysis. |
| Prep comments | None. |
| Analysis | PFAS were measured by liquid chromatography tandem mass spectrometry (LC-MS/MS) in the multiple reaction monitoring (MRM). An initial calibration consisting of representative target analytes, labelled analogs, and internal standards was analyzed prior to analysis to demonstrate the linear range of analysis. Calibration verification was performed at the beginning and end of 10 injections and at the end of each sequence. Target PFAS were quantified using the isotope dilution method. Samples are reported in ng/L concentrations. |
| Analysis Comments | Samples analyzed on Sciex 5500 LC-MS/MS.<br><br>There were no detected results above the LOQ with ion ratios above 50% RPD. |

| Holding Times | Extraction Date(s) | Analysis Date(s) |
|---|---|---|
| | 8/22/2018 | 8/24 – 25/2018 |

| | |
|---|---|
| Procedural Blank (PB) | A PB was prepared with this analytical batch to ensure the sample extraction and analysis methods are free of contamination. |
| ≤ ½ the LOQ Samples >10x PB | One exceedance noted. |
| | PFOA in the LCS sample is "B" qualified as it was spiked at the 2x the LOQ and was detected at a concentration less than 10x the concentration in the blank. Note that the blank is less than ½ the LOQ and does not fail blank criteria. |

# QA/QC Summary
# Batch 18-0520

| | |
|---|---|
| Laboratory Control Spike (LCS) | A LCS was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure accuracy. |
| Laboratory derived control limits for recovery | No exceedances noted. |
| | No comments. |

| | |
|---|---|
| Extracted Internal Standard Analytes | Labelled analog compounds were added prior to extraction. The recoveries are calculated to measure extraction efficiency. |
| 50-150% of true value | No exceedances noted. |
| | No comments. |

| | |
|---|---|
| Initial Calibration (ICAL) | The LC-MS/MS was calibrated with multi-level calibration curve for all compounds using linear or quadradic curve fitting. |
| +/- 30% of true value, $R^2 \geq 0.99$ | No exceedances noted. |
| | No comments. |

| | |
|---|---|
| Independent Calibration Check (ICC) | The independent check was run after each initial calibration to verify the calibration. This standard is from a different source than the ICAL. |
| +/- 30% of true value | No exceedances noted. |
| | No comments. |

| | |
|---|---|
| Continuing Calibration Verification (CCV) | Continuing calibration standards were run at the beginning and end of 10 injections and at the end of the sequence to ensure that initial calibration is still valid. |
| +/- 30% of true value | No exceedances noted. |
| | No comments. |

| | |
|---|---|
| Instrument Blank (IB) | Immediately following the highest standard analyzed and daily prior to sample analysis. |
| ≤ ½ the LOQ | No exceedances noted. |
| | No comments. |

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project Number: 100122108-CTOWE21
Preparation Batch: 18-0520
Data Set: DP-18-0234
Test Code: Master_369

| QC Parameter: | Exceed: | Justification: |
|---|---|---|
| Procedural Blank | 0 | None |
| PB Measurement Quality Objective | 1 | PFOA was detected at less than ten times the blank concentration in the LCS. Integrations and prep records were verified. DMS 8/29/2018 |
| Laboratory Control Sample | 0 | None |
| Matrix Spike / Matrix Spike Duplicate Recovery | NA | NA |
| Matrix Spike / Matrix Spike Duplicate Precision | NA | NA |
| Extracted Internal Standard Analytes (Surrogates) | 0 | None |
| Instrument Calibration | 0 | None |
| Instrument Blank | 0 | None |
| Independent Calibration Check | 0 | None |
| Continuing Calibration Verification | 0 | None |

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## MISCELLANEOUS DOCUMENTATION FORM

| | | | |
|---|---|---|---|
| **Project Title:** | CTO-WE21: Former Naval Air Station, B | **Data Set Number:** | DP-18-0234 |
| **Project Number:** | 100122108-CTOWE21 | **Prep Batch Number:** | 18-0520 |
| **Entered By:** | Denise Schumitz | **Entered On:** | 08/29/2018 |
| **Test Code (Matrix Type):** | Master_369(L) | | |

Samples that were manually integrated are noted on the quant reports with the comment (TRUE).
DMS 8/29/2018

JY38 is not being used for PFHpA in this method. There is no impact on the data once this point is removed from the calibration.
DMS 8/29/2018

**Task Leader Approval:**

**SupervisorApproval:**

**PM Approval:**

Digitally signed by Jonathan Thorn
Date: 2018.08.29 16:17:16 -04'00'

# Example Calculation for PFAS

Calculation of final concentration from area:

$$Concentration = \left[\frac{PA - b}{m}\right] * C_{IS} * PIV * DF/S$$

Where:

PA = Area of target / area of internal standard
b = y intercept from calibration curve
CIS = concentration of internal standard (ng/L)
m = slope of calibration
DF = dilution factor
S = Sample Size
PIV = Pre-injection volume (L)

| | |
|---|---|
| Sample ID: | J7401-FS(3) |
| Client Sample ID: | NASB-BLL15-GW-FB01-080918 |
| Sample Size: | 0.265 |
| Units: | L |
| Dilution Factor: | 2.000 |
| PIV (L): | 0.0005 |
| Target Analyte: | PFBA |
| MRM Transition: | 213.0 / 169.0 |
| Data file: | 18-0501-515-520-500.wiff |
| Result table: | 18-0520_Base |
| Area: | 217,707.16 |
| IS Name: | 13C4-PFBA |
| IS Area: | 40,832.10 |
| IS Amount (ng/L): | 250 |
| y-intercept: | 1.65863 |
| slope: | 1.49737 |

$$\text{Concentration} = \frac{[(217707.16/40832.1) - 1.65863]}{1.49737} * 250 * 0.0005 * 2 / 0.265$$

ng/L = 2.31

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21
Preparation Batch: 18-0520
Data Set: DP-18-0234

| | CR635PB-FS (Procedural Blank) | CR636LCS-FS (Laboratory Control Sample) | J7401-FS (NASB-BLL15-GW-FB01-080918) |
|---|---|---|---|
| PFBA | L | L | L |
| PFHxA | - | L | - |
| PFHpA | - | L | - |
| PFOA | L | L | L |
| PFNA | - | L | - |
| PFDA | - | L | - |
| PFUnA | - | L | - |
| PFDoA | - | L | - |
| PFTrDA | - | L | - |
| PFTeDA | - | L | - |
| NMeFOSAA | - | L | - |
| NEtFOSAA | - | L | - |
| PFBS | - | L | - |
| PFHxS | - | L/Br | - |
| PFOS | L/Br | L/Br | L/Br |

"L" :Linear
"Br": branched
"L/Br": Linear/Branched
"-": Not detected

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper |
|---|---|---|---|---|---|---|
| JY42 | L5 | 8/24/18 23:20 | 13C3-PFBA | 62,099.81 | 31,049.91 | 93,149.72 |

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper | Qualifier |
|---|---|---|---|---|---|---|---|
| JY38 | L1 | 8/24/18 22:36 | 13C3-PFBA | 55,737.70 | 31,049.91 | 93,149.72 | |
| JY39 | L2 | 8/24/18 22:47 | 13C3-PFBA | 54,856.95 | 31,049.91 | 93,149.72 | |
| JY40 | L3 | 8/24/18 22:58 | 13C3-PFBA | 57,614.29 | 31,049.91 | 93,149.72 | |
| JY41 | L4 | 8/24/18 23:09 | 13C3-PFBA | 57,883.97 | 31,049.91 | 93,149.72 | |
| JY42 | L5 | 8/24/18 23:20 | 13C3-PFBA | 62,099.81 | 31,049.91 | 93,149.72 | |
| JY43 | L6 | 8/24/18 23:31 | 13C3-PFBA | 58,707.76 | 31,049.91 | 93,149.72 | |
| JY44 | L7 | 8/24/18 23:42 | 13C3-PFBA | 56,480.01 | 31,049.91 | 93,149.72 | |
| JY46 IB | Instrument Blank | 8/24/18 23:53 | 13C3-PFBA | 55,663.08 | 31,049.91 | 93,149.72 | |
| JY45 ICC | ICC | 8/25/18 0:03 | 13C3-PFBA | 59,885.14 | 31,049.91 | 93,149.72 | |
| CR635PB-FS(3) | Procedural Blank | 8/25/18 1:09 | 13C3-PFBA | 63,890.01 | 31,049.91 | 93,149.72 | |
| CR636LCS-FS(3) | Laboratory Control Sample | 8/25/18 1:20 | 13C3-PFBA | 54,125.02 | 31,049.91 | 93,149.72 | |
| J7401-FS(3) | NASB-BLL15-GW-FB01-080918 | 8/25/18 1:30 | 13C3-PFBA | 47,260.33 | 31,049.91 | 93,149.72 | |
| JY41 CCV | CCV | 8/25/18 1:41 | 13C3-PFBA | 53,615.03 | 31,049.91 | 93,149.72 | |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper |
|---|---|---|---|---|---|---|
| JY42 | L5 | 8/24/18 23:20 | 13C2-PFOA | 92,608.08 | 46,304.04 | 138,912.12 |

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper | Qualifier |
|---|---|---|---|---|---|---|---|
| JY38 | L1 | 8/24/18 22:36 | 13C2-PFOA | 89,686.34 | 46,304.04 | 138,912.12 | |
| JY39 | L2 | 8/24/18 22:47 | 13C2-PFOA | 90,381.96 | 46,304.04 | 138,912.12 | |
| JY40 | L3 | 8/24/18 22:58 | 13C2-PFOA | 87,326.72 | 46,304.04 | 138,912.12 | |
| JY41 | L4 | 8/24/18 23:09 | 13C2-PFOA | 89,865.42 | 46,304.04 | 138,912.12 | |
| JY42 | L5 | 8/24/18 23:20 | 13C2-PFOA | 92,608.08 | 46,304.04 | 138,912.12 | |
| JY43 | L6 | 8/24/18 23:31 | 13C2-PFOA | 91,795.08 | 46,304.04 | 138,912.12 | |
| JY44 | L7 | 8/24/18 23:42 | 13C2-PFOA | 91,050.54 | 46,304.04 | 138,912.12 | |
| JY46 IB | Instrument Blank | 8/24/18 23:53 | 13C2-PFOA | 86,993.18 | 46,304.04 | 138,912.12 | |
| JY45 ICC | ICC | 8/25/18 0:03 | 13C2-PFOA | 94,996.84 | 46,304.04 | 138,912.12 | |
| CR635PB-FS(3) | Procedural Blank | 8/25/18 1:09 | 13C2-PFOA | 87,794.17 | 46,304.04 | 138,912.12 | |
| CR636LCS-FS(3) | Laboratory Control Sample | 8/25/18 1:20 | 13C2-PFOA | 76,087.27 | 46,304.04 | 138,912.12 | |
| J7401-FS(3) | NASB-BLL15-GW-FB01-080918 | 8/25/18 1:30 | 13C2-PFOA | 76,320.12 | 46,304.04 | 138,912.12 | |
| JY41 CCV | CCV | 8/25/18 1:41 | 13C2-PFOA | 88,803.80 | 46,304.04 | 138,912.12 | |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper |
|---|---|---|---|---|---|---|
| JY42 | L5 | 8/24/18 23:20 | 13C2-PFDA | 105,936.28 | 52,968.14 | 158,904.42 |

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper | Qualifier |
|---|---|---|---|---|---|---|---|
| JY38 | L1 | 8/24/18 22:36 | 13C2-PFDA | 101,703.93 | 52,968.14 | 158,904.42 | |
| JY39 | L2 | 8/24/18 22:47 | 13C2-PFDA | 104,669.39 | 52,968.14 | 158,904.42 | |
| JY40 | L3 | 8/24/18 22:58 | 13C2-PFDA | 99,261.32 | 52,968.14 | 158,904.42 | |
| JY41 | L4 | 8/24/18 23:09 | 13C2-PFDA | 100,506.14 | 52,968.14 | 158,904.42 | |
| JY42 | L5 | 8/24/18 23:20 | 13C2-PFDA | 105,936.28 | 52,968.14 | 158,904.42 | |
| JY43 | L6 | 8/24/18 23:31 | 13C2-PFDA | 113,124.25 | 52,968.14 | 158,904.42 | |
| JY44 | L7 | 8/24/18 23:42 | 13C2-PFDA | 103,798.12 | 52,968.14 | 158,904.42 | |
| JY46 IB | Instrument Blank | 8/24/18 23:53 | 13C2-PFDA | 98,444.02 | 52,968.14 | 158,904.42 | |
| JY45 ICC | ICC | 8/25/18 0:03 | 13C2-PFDA | 113,766.69 | 52,968.14 | 158,904.42 | |
| CR635PB-FS(3) | Procedural Blank | 8/25/18 1:09 | 13C2-PFDA | 106,743.63 | 52,968.14 | 158,904.42 | |
| CR636LCS-FS(3) | Laboratory Control Sample | 8/25/18 1:20 | 13C2-PFDA | 91,207.27 | 52,968.14 | 158,904.42 | |
| J7401-FS(3) | NASB-BLL15-GW-FB01-080918 | 8/25/18 1:30 | 13C2-PFDA | 84,986.73 | 52,968.14 | 158,904.42 | |
| JY41 CCV | CCV | 8/25/18 1:41 | 13C2-PFDA | 107,120.62 | 52,968.14 | 158,904.42 | |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper |
|---|---|---|---|---|---|---|
| JY42 | L5 | 8/24/18 23:20 | 13C4-PFOS | 32,248.02 | 16,124.01 | 48,372.03 |

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper | Qualifier |
|---|---|---|---|---|---|---|---|
| JY38 | L1 | 8/24/18 22:36 | 13C4-PFOS | 33,175.18 | 16,124.01 | 48,372.03 | |
| JY39 | L2 | 8/24/18 22:47 | 13C4-PFOS | 31,211.04 | 16,124.01 | 48,372.03 | |
| JY40 | L3 | 8/24/18 22:58 | 13C4-PFOS | 31,393.82 | 16,124.01 | 48,372.03 | |
| JY41 | L4 | 8/24/18 23:09 | 13C4-PFOS | 31,692.96 | 16,124.01 | 48,372.03 | |
| JY42 | L5 | 8/24/18 23:20 | 13C4-PFOS | 32,248.02 | 16,124.01 | 48,372.03 | |
| JY43 | L6 | 8/24/18 23:31 | 13C4-PFOS | 32,619.41 | 16,124.01 | 48,372.03 | |
| JY44 | L7 | 8/24/18 23:42 | 13C4-PFOS | 28,605.63 | 16,124.01 | 48,372.03 | |
| JY46 IB | Instrument Blank | 8/24/18 23:53 | 13C4-PFOS | 30,847.94 | 16,124.01 | 48,372.03 | |
| JY45 ICC | ICC | 8/25/18 0:03 | 13C4-PFOS | 37,275.00 | 16,124.01 | 48,372.03 | |
| CR635PB-FS(3) | Procedural Blank | 8/25/18 1:09 | 13C4-PFOS | 28,851.79 | 16,124.01 | 48,372.03 | |
| CR636LCS-FS(3) | Laboratory Control Sample | 8/25/18 1:20 | 13C4-PFOS | 24,552.30 | 16,124.01 | 48,372.03 | |
| J7401-FS(3) | NASB-BLL15-GW-FB01-080918 | 8/25/18 1:30 | 13C4-PFOS | 26,359.53 | 16,124.01 | 48,372.03 | |
| JY41 CCV | CCV | 8/25/18 1:41 | 13C4-PFOS | 30,502.51 | 16,124.01 | 48,372.03 | |

BATTELLE

Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:22 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY44 | **Injection Vial** | 8 |
| **Sample ID** | L7 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 11:42:11 PM | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Spectra Acquisition Rate | Passing Range |
|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | 55 | >10 |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 51 | >10 |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 25 | >10 |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 26 | >10 |
| PFHpA_1 | 363.0 / 319.0 | 2.26 | 29 | >10 |
| PFHpA_2 | 363.0 / 169.0 | 2.26 | 30 | >10 |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | 48 | >10 |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | 46 | >10 |
| PFOA_1 | 413.0 / 369.0 | 2.66 | 49 | >10 |
| PFOA_2 | 413.0 / 169.0 | 2.66 | 36 | >10 |
| PFNA_1 | 463.0 / 419.0 | 3.05 | 33 | >10 |
| PFNA_2 | 463.0 / 219.0 | 3.05 | 31 | >10 |
| PFOS_1 | 499.0 / 80.0 | 3.04 | 31 | >10 |
| PFOS_2 | 499.0 / 99.0 | 3.04 | 52 | >10 |
| PFDA_1 | 513.0 / 469.0 | 3.40 | 46 | >10 |
| PFDA_2 | 513.0 / 219.0 | 3.40 | 39 | >10 |
| PFUnA_1 | 563.0 / 519.0 | 3.72 | 30 | >10 |
| PFUnA_2 | 563.0 / 269.0 | 3.72 | 57 | >10 |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | 32 | >10 |
| PFDoA_2 | 613.0 / 319.0 | 4.00 | 38 | >10 |
| PFTrDA_1 | 663.0 / 619.0 | 4.25 | 64 | >10 |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | 37 | >10 |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | 86 | >10 |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | 49 | >10 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.55 | 48 | >10 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.55 | 34 | >10 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.72 | 36 | >10 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.72 | 25 | >10 |
| PFBA | 213.0 / 169.0 | 1.16 | 45 | >10 |

BATTELLE

Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 29/08/2018 2:09:34 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY44 | **Injection Vial** | 8 |
| **Sample ID** | L7 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 11:42:11 PM | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Spectra Acquisition Rate | Passing Range |
|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.16 | 44 | >10 |
| 13C2-PFDoA | 615.0 / 570.0 | 3.99 | 41 | >10 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.55 | 35 | >10 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.71 | 23 | >10 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 37 | >10 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 37 | >10 |
| 13C8-PFOA | 421.0 / 376.0 | 2.65 | 34 | >10 |
| 13C9-PFNA | 472.0 / 427.0 | 3.03 | 35 | >10 |
| 13C6-PFDA | 519.0 / 474.0 | 3.38 | 33 | >10 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.71 | 37 | >10 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.46 | 42 | >10 |
| 13C3-PFBS | 302.0 / 99.0 | 1.53 | 33 | >10 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.27 | 33 | >10 |
| 13C8-PFOS | 507.0 / 99.0 | 3.03 | 25 | >10 |

BATTELLE
It can be done

Precision and Bias at the LOQ for PFAS in non-potable Water

| Analyte | CAS No. | Average (ng/L) | ST DEV | 3 Sigma | n |
|---|---|---|---|---|---|
| PFBA | 375-22-4 | 12.40 | 2.18 | 6.54 | 11 |
| PFPeA | 2706-90-3 | 10.73 | 1.51 | 4.53 | 9 |
| PFHxA | 307-24-4 | 10.07 | 1.25 | 3.75 | 30 |
| PFHpA | 375-85-9 | 9.51 | 1.71 | 5.13 | 30 |
| PFOA | 335-67-1 | 10.06 | 1.60 | 4.80 | 31 |
| PFNA | 375-95-1 | 9.70 | 1.23 | 3.69 | 30 |
| PFDA | 335-76-2 | 10.04 | 1.43 | 4.29 | 30 |
| PFUnA | 2058-94-8 | 9.95 | 1.45 | 4.35 | 30 |
| PFDoA | 307-55-1 | 11.03 | 1.28 | 3.84 | 30 |
| PFTrDA | 72629-94-8 | 11.52 | 1.50 | 4.50 | 30 |
| PFTeDA | 376-06-7 | 10.92 | 2.07 | 6.21 | 30 |
| NMeFOSAA | 2355-31-9 | 10.21 | 2.04 | 6.12 | 30 |
| NEtFOSAA | 2991-50-6 | 9.60 | 1.70 | 5.10 | 30 |
| PFOSA | 754-91-6 | 9.74 | 1.14 | 3.42 | 3 |
| PFBS | 375-73-5 | 10.25 | 1.55 | 4.65 | 31 |
| PFPeS | BDO-2114 | 9.80 | 0.96 | 2.88 | 4 |
| PFHxS | 355-46-4 | 9.90 | 1.52 | 4.56 | 30 |
| PFHpS | 375-99-6 | 10.96 | 0.96 | 2.88 | 9 |
| PFOS | 1763-23-1 | 10.16 | 1.47 | 4.41 | 30 |
| PFNS | 98789-57-2 | 9.34 | 1.10 | 3.30 | 4 |
| PFDS | 2806-15-7 | 10.13 | 1.88 | 5.64 | 9 |
| 4:2FTS | BDO-2205 | 11.03 | 1.26 | 3.78 | 9 |
| 6:2FTS | 27619-97-2 | 12.52 | 2.91 | 8.73 | 9 |
| 8:2FTS | 39108-34-4 | 12.11 | 2.54 | 7.62 | 9 |

# BATTELLE DETECTION LIMITS FOR PFAS IN NON-POTABLE WATER

Analytical SOP 5-369
Extraction SOP 5-370

PFAS by LC-MS/MS Compliant with QSM 5.1 Compliant Table B-15

| Analyte | CAS No. | MDL (ng/L) | LOD (ng/L) | LOQ (ng/L) |
|---|---|---|---|---|
| ***PFBA*** | 375-22-4 | 0.14 | 0.5 | 5.0 |
| ***PFPeA*** | 2706-90-3 | 0.31 | 1.0 | 5.0 |
| ***PFHxA*** | 307-24-4 | 0.19 | 0.5 | 5.0 |
| ***PFHpA*** | 375-85-9 | 0.16 | 0.5 | 5.0 |
| ***PFOA*** | 335-67-1 | 0.18 | 0.5 | 5.0 |
| ***PFNA*** | 375-95-1 | 0.26 | 1.0 | 5.0 |
| ***PFDA*** | 335-76-2 | 0.16 | 0.5 | 5.0 |
| ***PFUnA*** | 2058-94-8 | 0.29 | 1.0 | 5.0 |
| ***PFDoA*** | 307-55-1 | 0.18 | 0.5 | 5.0 |
| ***PFTrDA*** | 72629-94-8 | 0.15 | 0.5 | 5.0 |
| ***PFTeDA*** | 376-06-7 | 0.25 | 1.0 | 5.0 |
| ***NMeFOSAA*** | 2355-31-9 | 0.56 | 2.0 | 5.0 |
| ***NEtFOSAA*** | 2991-50-6 | 0.49 | 1.0 | 5.0 |
| PFOSA | 754-91-6 | TBD | TBD | TBD |
| ***PFBS*** | 375-73-5 | 0.13 | 0.5 | 5.0 |
| PFPeS | BDO-2114 | 0.67 | 2.5 | 5.0 |
| ***PFHxS*** | 355-46-4 | 0.11 | 0.4 | 5.0 |
| ***PFHpS*** | 375-99-6 | 0.20 | 0.5 | 5.0 |
| ***PFOS*** | 1763-23-1 | 0.19 | 0.5 | 5.0 |
| PFNS | 98789-57-2 | 0.46 | 1.0 | 5.0 |
| ***PFDS*** | 2806-15-7 | 0.17 | 0.5 | 5.0 |
| ***4:2FTS*** | BDO-2205 | 0.14 | 0.5 | 5.0 |
| ***6:2FTS*** | 27619-97-2 | 1.36 | 2.5 | 5.0 |
| ***8:2FTS*** | 39108-34-4 | 0.22 | 0.5 | 5.0 |

***Analytes on NELAP and ELAP QSM 5.1 Scope of accreditation***



Battelle and its logos are registered trademarks of Battelle Memorial Institute. © Battelle Memorial Institute 2018. All Rights Reserved.

ID 596 04/18

Analytical Transitions for PFAS in non-potable water, solid, and tissue

EPA 537 MOD DoD QSM 5.1 compliant with Table B-15 requirements

| Analyte | CAS No. | Type | Primary Transition | Secondary Transition |
|---|---|---|---|---|
| PFBA | 375-22-4 | Target | 213.0 / 169.0 | NA |
| PFPeA | 2706-90-3 | Target | 263.0 / 219.0 | NA |
| PFHxA | 307-24-4 | Target | 313.0 / 269.0 | 313.0 / 119.0 |
| PFHpA | 375-85-9 | Target | 363.0 / 319.0 | 363.0 / 169.0 |
| PFOA | 335-67-1 | Target | 413.0 / 369.0 | 413.0 / 169.0 |
| PFNA | 375-95-1 | Target | 463.0 / 419.0 | 463.0 / 219.0 |
| PFDA | 335-76-2 | Target | 513.0 / 469.0 | 513.0 / 219.0 |
| PFUnA | 2058-94-8 | Target | 563.0 / 519.0 | 563.0 / 269.0 |
| PFDoA | 307-55-1 | Target | 613.0 / 569.0 | 613.0 / 319.0 |
| PFTrDA | 72629-94-8 | Target | 663.0 / 619.0 | 663.0 / 169.0 |
| PFTeDA | 376-06-7 | Target | 713.0 / 669.0 | 713.0 / 169.0 |
| NMeFOSAA | 2355-31-9 | Target | 570.0 / 419.0 | 570.0 / 512.0 |
| NEtFOSAA | 2991-50-6 | Target | 584.0 / 419.0 | 584.0 / 483.0 |
| PFOSA | 754-91-6 | Target | 498.0 / 78.0 | 498.0 / 83.0 |
| PFBS | 375-73-5 | Target | 299.0 / 80.0 | 299.0 / 99.0 |
| PFPeS | BDO-2114 | Target | 349.0 / 99.0 | 249.0 / 80.0 |
| PFHxS | 355-46-4 | Target | 399.0 / 80.0 | 399.0 / 99.0 |
| PFHpS | 375-99-6 | Target | 449.0 / 80.0 | 449.0 / 99.0 |
| PFOS | 1763-23-1 | Target | 499.0 / 80.0 | 499.0 / 99.0 |
| PFNS | 98789-57-2 | Target | 549.0 / 99.0 | 549.0 / 80.0 |
| PFDS | 2806-15-7 | Target | 599.0 / 80.0 | 599.0 / 99.0 |
| 4:2FTS | BDO-2205 | Target | 327.0 / 307.0 | 327.0 / 80.0 |
| 6:2FTS | 27619-97-2 | Target | 427.0 / 407.0 | 427.0 / 81.0 |
| 8:2FTS | 39108-34-4 | Target | 527.0 / 507.0 | 527.0 / 487.0 |
| 13C4-PFBA | BDO-2105 | SIS[1] | 217.0 / 172.0 | NA |
| 13C5-PFPeA | BDO-2216 | SIS[1] | 268.0 / 223.0 | NA |
| 13C5-PFHxA | BDO-2217 | SIS[1] | 318.0 / 273.0 | NA |

| Analyte | CAS No. | Type | Primary Transition | Secondary Transition |
|---|---|---|---|---|
| 13C4-PFHpA | BDO-2218 | SIS[1] | 367.0 / 322.0 | NA |
| 13C8-PFOA | BDO-2219 | SIS[1] | 421.0 / 376.0 | NA |
| 13C9-PFNA | BDO-2221 | SIS[1] | 472.0 / 427.0 | NA |
| 13C6-PFDA | BDO-2222 | SIS[1] | 519.0 / 474.0 | NA |
| 13C7-PFUnA | BDO-2223 | SIS[1] | 570.0 / 525.0 | NA |
| 13C2-PFDoA | BDO-2112 | SIS[1] | 615.0 / 570.0 | NA |
| 13C2-PFTeDA | BDO-2224 | SIS[1] | 715.0 / 670.0 | NA |
| d3-MeFOSAA | BDO-1838 | SIS[1] | 573.0 / 419.0 | NA |
| d5-EtFOSAA | BDO-1839 | SIS[1] | 589.0 / 419.0 | NA |
| 13C8-FOSA | BDO-2225 | SIS[1] | 506.0 / 78.0 | NA |
| 13C3-PFBS | BDO-2226 | SIS[1] | 302.0 / 99.0 | NA |
| 13C3-PFHxS | BDO-2227 | SIS[1] | 402.0 / 99.0 | NA |
| 13C8-PFOS | BDO-2228 | SIS[1] | 507.0 / 99.0 | NA |
| 13C2-4:2FTS | BDO-2229 | SIS[1] | 329.0 / 81.0 | NA |
| 13C2-6:2FTS | BDO-2230 | SIS[1] | 429.0 / 81.0 | NA |
| 13C2-8:2FTS | BDO-2220 | SIS[1] | 529.0 / 81.0 | NA |
| 13C3-PFBA | BDO-2231 | IS[2] | 216.0 / 172.0 | NA |
| 13C2-PFOA | BDO-2107 | IS[2] | 415.0 / 370.0 | NA |
| 13C2-PFDA | BDO-2110 | IS[2] | 515.0 / 470.0 | NA |
| 13C4-PFOS | BDO-2121 | IS[2] | 503.0 / 99.0 | NA |

[1] – extracted internal standard (surrogate)
[2] – injection internal standard

BATTELLE

Non-Potable Water Calibration to Sample Equivalents

| ICAL (ng/L) | PIV (mL) | DF[1] | Sample Size (L) | Sample Equivalent (ng/L)[2] |
|---|---|---|---|---|
| 25 | 0.5 | 2 | 0.250 | 0.1 |
| 50 | 0.5 | 2 | 0.250 | 0.2 |
| 100 | 0.5 | 2 | 0.250 | 0.4 |
| 250 | 0.5 | 2 | 0.250 | 1.0 |
| 500 | 0.5 | 2 | 0.250 | 2.0 |
| 1,000 | 0.5 | 2 | 0.250 | 4.0 |
| 2,500 | 0.5 | 2 | 0.250 | 10.0 |
| 10,000 | 0.5 | 2 | 0.250 | 40.0 |
| 20,000 | 0.5 | 2 | 0.250 | 80.0 |

[1] - base level dilution as part of the extraction procedure

[2] - calculated equivalent of a sample based on the ICAL concentration

**Zef Scientific Inc.**

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

# QTRAP 5500

**LC/MS/MS Detector System**

Appendix ZEFPM003-2L

# QTRAP 5500
# Preventive Maintenance Checklist

| | |
|---|---|
| **Preventive Maintenance Date:** | 12-June-2018 |

| | |
|---|---|
| **Request ID:** | 9749 |
| **Company Name:** | Battelle Memorial Institute |
| **Instrument ID:** | X60666 |
| **Instrument Model:** | QTRAP 5500 |
| **Instrument Serial Number:** | AU23051004 |

☑ **PASS** ☐ **FAIL**

**Any failure will lead to an automatic Service Call being open to investigate fault.**

Preventive Maintenance is performed twice every year unless specified in the Service Contract. It is designed to help maintain optimum system performance and to help diagnose any system deficiencies.

Engineer is required the assigned Request ID for this PM otherwise making this job invalid.

**Comments:** Suspected issue with pulse gas manifold. TRAP testing in POSITIVE mode couldn't be finished because of pulse gas issue. The same issue will be taken care in separate service call.

**Performed By:** Kaustubh Dhayagude **Date:** 12-June-2018

**Approved By** :_____ **Date:** _____

© This document is the property of Zef Scientific and intended for Zef Scientific Inc trained engineers use only. No copying, all or partial, is permitted without prior authorization.

**Zef Scientific Inc.**

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

# QTRAP 5500

**LC/MS/MS Detector System**
Appendix ZEFPM003-2L

## PRE PM PPG PERFORMANCE EVALUATION:

☑ Consult Customer concerning the unit overall performance.
☑ Check Logbook for Services recently performed.
☑ Check Vacuum Pressure:

| CAD Settings | Vacuum Reading ( x $10^{-5}$ Torr) | Acceptance Criteria |
|---|---|---|
| ☑ CAD 0 | 0.6 | 0.4 to 1.1 x$10^{-5}$ Torr |
| ☑ CAD Low | 1.3 | Read Only |
| ☑ CAD Medium | 2.7 | Read Only |
| ☑ CAD High | 3.7 | Read Only |
| ☑ CAD 12 | 3.7 | 2.4 to 4.5 x$10^{-5}$ Torr |

☑ Check for Front end contamination symptoms. Run Q1 POS PPG using PPG 2e-7for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification

☑ No degradation or Sensitivity drop

☑ Check for Q3 contamination symptoms. Run Q3 POS PPG using PPG 2e-7for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification

☑ No degradation or Sensitivity drop

**Pre PM PPG Test:** Perform each of the following tests. Optimize ion source position only. The specifications listed for these Pre PM tests are guidelines only, not required to be met.

☑ Perform Q1 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

| Mass | Q1 Intensity | | Q1 Width Value | Width Specs |
|---|---|---|---|---|
| | Value | Spec | | |
| Q1 175.133 | 4.01 e6 | Read Only | 0.6998 | Read Only |
| Q1 500.380 | 2.81 e7 | Read Only | 0.7038 | Read Only |
| Q1 906.673 | 4.21 e7 | Read Only | 0.7071 | Read Only |

☑ Perform Q3 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

| Mass | Q3 Intensity | | Q3 Width Value | Width Specs |
|---|---|---|---|---|
| | Value | Spec | | |
| Q3 175.133 | 5.45 e6 | Read Only | 0.6873 | Read Only |
| Q3 500.380 | 2.69 e7 | Read Only | 0.7591 | Read Only |
| Q3 906.673 | 4.50 e7 | Read Only | 0.7843 | Read Only |

© This document is the property of Zef Scientific and intended for Zef Scientific Inc trained engineers use only. No copying, all or partial, is permitted without prior authorization.

**Zef Scientific Inc.**

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

# QTRAP 5500

**LC/MS/MS Detector System**

Appendix ZEFPM003-2L

☐ Perform MSMS POS in Product Ion scan with 609.3 parent and record daughter 195.1 using Reserpine 0.167 pmol/ul at the scan rate of 10 Da/s for 10 MCA. Calculate transmission efficiency comparing Q1POS 609 intensity. Transmission Efficiency: :__28.87%__ (Read Only)

| Mass | MSMS Intensity | | MSMS Width Value | Width Specs |
|---|---|---|---|---|
| | Value | Spec | | |
| Q1 609.3 | 4.26 e7 | Read Only | 0.7011 | Read Only |
| MS/MS 195.1 | 1.23 e7 | Read Only | 0.7069 | Read Only |

☑ Perform Q1 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

| Mass | Q1 Intensity | | Q1 Width Value | Width Specs |
|---|---|---|---|---|
| | Value | Spec | | |
| Q1 933.636 | 1.42 e7 | Read Only | 0.7686 | Read Only |

☑ Perform Q3 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

| Mass | Q3 Intensity | | Q3 Width Value | Width Specs |
|---|---|---|---|---|
| | Value | Spec | | |
| Q3 933.636 | 2.24 e7 | Read Only | 0.7243 | Read Only |

☑ Perform Product Ion scan using NEG PPG 3e-5M. Record10mca.

| Mass | Scan Rate | MCA | MSMS Intensity | | MSMS Width Value | Width Specs |
|---|---|---|---|---|---|---|
| | | | Value | Spec | | |
| MSMS 45 | 10 | 10 | 3.31 e6 | Read Only | 0.6746 | Read Only |

© This document is the property of Zef Scientific and intended for Zef Scientific Inc trained engineers use only. No copying, all or partial, is permitted without prior authorization.

**Zef Scientific Inc.**

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

# QTRAP 5500

**LC/MS/MS Detector System**

Appendix ZEFPM003-2L

## PREVENTIVE MAINTENANCE CHECKLIST:

☑ Check Cooling Fans for Turbo Pumps while MS is ON.
☑ Check QJet and QPS tuning voltage for reference.
☐ Record AC input Voltage while MS is OFF: _____(200-240VAC).
If Out-of-Range, notify customer.

☑ Clean Interface
- ☑ Curtain Plate
- ☑ Orifice Plate
- ☑ QJet
- ☑ Q0 Rods.

☑ Replace Roughing Pump Oil.
☑ Inspect Oil Exhaust Filter, if Applicable. ☐ N/A
☑ Clean and inspect built-in divert valve if used. ☐ N/A
☑ Check Multiplier Voltage, optimize if necessary.
☑ Replace four Air Filters at the bottom of the mass spectrometer.

☑Pump down overnight if possible. ☐ N/A

☑Perform Maintenance on Turbo V source.

☑Replace Electrode, if necessary. ☐ N/A
☑Check Turbo heaters resistances.
☑Check if Temperature is reached at 500C with TIS Probe installed.
☐Check if Temperature is reached at 500C with APCI Probe installed. ☑ N/A

© This document is the property of Zef Scientific and intended for Zef Scientific Inc trained engineers use only. No copying, all or partial, is permitted without prior authorization.

**Zef Scientific Inc.**

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

# QTRAP 5500

**LC/MS/MS Detector System**
Appendix ZEFPM003-2L

## POST PM PPG PERFORMANCE TESTS:

☑ Set-up Sample for Infusion.
☑ Check spray and adjust sprayer's position of the TIS source.
☑ Check Vacuum Pressure:

| CAD Settings | Vacuum Reading ( x $10^{-5}$ Torr) | Acceptance Criteria |
|---|---|---|
| ☑ CAD 0 | 0.7 | 0.4 to 1.1 x$10^{-5}$ Torr |
| ☑ CAD Low | 1.3 | Read Only |
| ☑ CAD Medium | 2.7 | Read Only |
| ☑ CAD High | 3.7 | Read Only |
| ☑ CAD 12 | 3.7 | 2.4 to 4.5 x$10^{-5}$ Torr |

☑ Perform Q1 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

| Mass | Q1 Intensity | | Q1 Width Value | Width Specs |
|---|---|---|---|---|
| | Value | Spec | | |
| Scan Rate 10 Da/s Record 10 mca | | | | |
| Q1 175.133 | 5.04 e6 | ≥1.2$^{e}$6 | 0.6737 | 0.6 to 0.8 |
| Q1 500.380 | 1.60 e7 | ≥9.0$^{e}$6 | 0.6961 | 0.6 to 0.8 |
| Q1 906.673 | 2.84 e7 | ≥1.4$^{e}$7 | 0.7179 | 0.6 to 0.8 |
| Scan Rate 1000 Da/s Record 50 mca | | | | |
| Q1 906.673 | 1.33 e8 | ≥6.8$^{e}$7 | 0.7465 | 0.6 to 0.8 |

☑ Perform Q3 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

| Mass | Q3 Intensity | | Q3 Width Value | Width Specs |
|---|---|---|---|---|
| | Value | Spec | | |
| Scan Rate 10 Da/s Record 10 mca | | | | |
| Q3 175.133 | 5.02 e6 | ≥1.2$^{e}$6 | 0.6719 | 0.6 to 0.8 |
| Q3 500.380 | 1.72 e7 | ≥9.0$^{e}$6 | 0.7443 | 0.6 to 0.8 |
| Q3 906.673 | 3.00 e7 | ≥1.4$^{e}$7 | 0.7504 | 0.6 to 0.8 |
| Scan Rate 1000 Da/s Record 50 mca | | | | |
| Q3 906.673 | 1.46 e8 | ≥6.8$^{e}$7 | 0.7202 | 0.6 to 0.8 |

☑ Perform "Product of 609.3" POS and record product ion 195.1 using Reserpine 0.167pmol/uL. Record 10 mca. Calculate Transmission efficiency comparing Q1POS 609 intensity.
Transmission Efficiency: 21.10% (≥ 10.0%)

| Mass | MSMS Intensity | | Width Value | Width Specs |
|---|---|---|---|---|
| | Value | Spec | | |
| Q1 609.3 | 5.78 e7 | N/A | 0.6888 | Read Only |
| MS/MS 195.1 | 1.22 e7 | N/A | 0.7003 | Read Only |

© This document is the property of Zef Scientific and intended for Zef Scientific Inc trained engineers use only. No copying, all or partial, is permitted without prior authorization.

**Zef Scientific Inc.**

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

# QTRAP 5500

**LC/MS/MS Detector System**

Appendix ZEFPM003-2L

☑ Perform Q1 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

| Mass | Scan Rate | Mca | Q1 Intensity | | Q1 Width Value | Width Specs |
|---|---|---|---|---|---|---|
| | | | Value | Spec | | |
| Q1 933.636 | 10 | 10 | 1.35 e7 | ≥1.0^e7 | 0.7486 | 0.6 to 0.8 |
| Q1 933.636 | 1000 | 50 | 7.52 e7 | ≥4.0^e7 | 0.7206 | 0.6 to 0.8 |

☑ Perform Q3 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

| Mass | Scan Rate | Mca | Q3 Intensity | | Q3 Width Value | Width Specs |
|---|---|---|---|---|---|---|
| | | | Value | Spec | | |
| Q3 933.636 | 10 | 10 | 2.15 e7 | ≥8.0^e6 | 0.7492 | 0.6 to 0.8 |
| Q3 933.636 | 1000 | 50 | 8.33 e7 | ≥4.0^e7 | 0.7299 | 0.6 to 0.8 |

☑ Perform Product Ion scan using NEG PPG 3e-5M.

| Mass | Scan Rate | Mca | MSMS Intensity | | MSMS Width Value | Width Specs |
|---|---|---|---|---|---|---|
| | | | Value | Spec | | |
| MSMS 45 | 10 | 10 | 3.33 e6 | Read Only | 0.6387 | Read Only |

☑ Perform ER POS 118.087 and 922.01 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

| Mass | Fill Time (ms) | ER Intensity | | ER Width Value | Width Specs |
|---|---|---|---|---|---|
| | | Value | Spec | | |
| ScanRate : 1000 Da/s ; 50 Mca | | | | | |
| ER 118.087 | 0.05 | 8.54 e6 | ≥7.2 ^e6 | 0.1473 | <0.35 |
| ER 922.010 | 0.05 | 4.96 e7 | ≥2.8 ^e6 | 0.2434 | <0.35 |
| ScanRate : 10000 Da/s ; 50 Mca | | | | | |
| ER 118.087 | 0.05 | | ≥2.4 ^e7 | | <0.65 |
| ER 922.010 | 0.05 | | ≥6.8 ^e7 | | <0.65 |

☑ Perform ER NEG 431.982 and 601.978 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

| Mass | Fill Time (ms) | ER Intensity | | ER Width Value | Width Specs |
|---|---|---|---|---|---|
| | | Value | Spec | | |
| ScanRate : 1000 Da/s ; 50 Mca | | | | | |
| ER 431.982 | 0.05 | 1.81 e8 | ≥4.4 ^e7 | 0.1862 | <0.35 |
| ER 601.978 | 0.05 | 1.70 e8 | ≥5.6 ^e7 | 0.1809 | <0.35 |
| ScanRate : 10000 Da/s ; 50 Mca | | | | | |
| ER 431.982 | 0.05 | 5.72 e8 | ≥1.2 ^e8 | 0.5102 | <0.65 |
| ER 601.978 | 0.05 | 4.52 e8 | ≥1.6 ^e8 | 0.6187 | <0.65 |

© This document is the property of Zef Scientific and intended for Zef Scientific Inc trained engineers use only. No copying, all or partial, is permitted without prior authorization.

**Zef Scientific Inc.**

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

# QTRAP 5500

**LC/MS/MS Detector System**

Appendix ZEFPM003-2L

☑ Perform EPI POS 397.2 using Reserpine 0.167pmol/uL. Record 20 mca.

| Mass | Scan Rate (Da/s) | Q0 Trapping OFF | | Q0 Trapping ON | |
|---|---|---|---|---|---|
| | | Intensity | Spec | Intensity | Spec |
| EPI 397.2 | 10000 | > 3.0 e6 | ≥2.0 e6 | > 7.0 e6 | ≥6.4 e6 |

☑ Perform MS3 POS full scan Fragmentation ON & OFF using Reserpine 0.167pmol/uL. Record 20 mca.

| Mass | Scan Rate (Da/s) | Fragamentation OFF | | Fragmentation ON | |
|---|---|---|---|---|---|
| | | Intensity | Spec | Intensity | Spec |
| MS3 397.2 | 1000 | Yes | Contains only 397.2 | N/A | N/A |
| ☐ 236 OR ☑ 365 | 1000 | Yes | Fragment Intensity | > 2.0 e6 | ≥1.6x $10^{e}6$ |

## REVIEW:

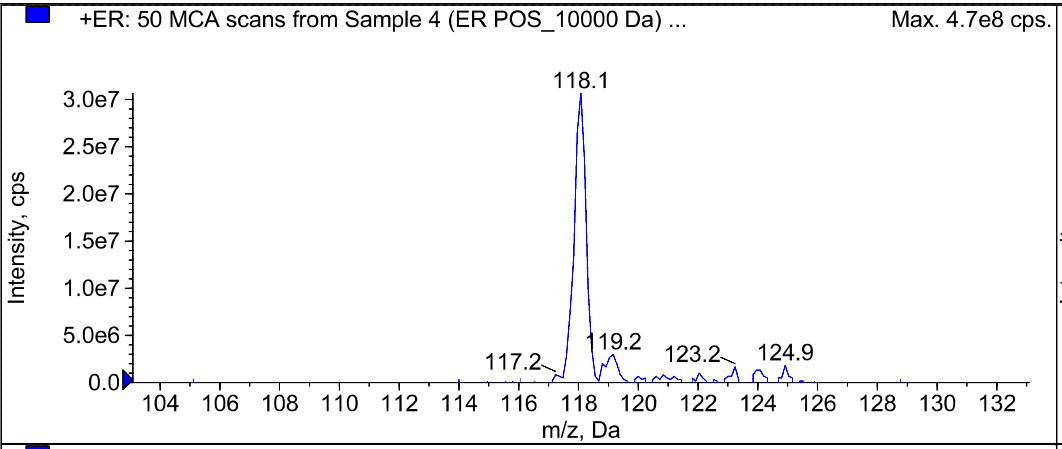
☑ Attach all spectrums printouts to this procedure.
☑ If any parameter setting access modes were changed during the PM, ensure they are returned to their normal access mode and that their offsets are adjusted to match optimized values from the post-PM acquisition files.
☐ Empty tuning cache folder, if necessary. ☑ N/A
☑ Update Service Work Order status
☑ Fill and replace PM Label.

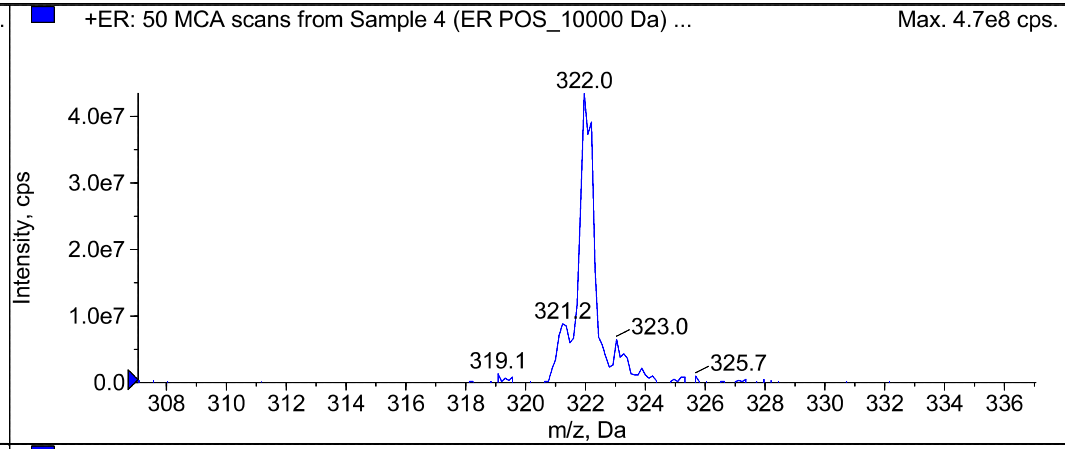
**END OF PREVENTIVE MAINTENANCE CHECKLIST**

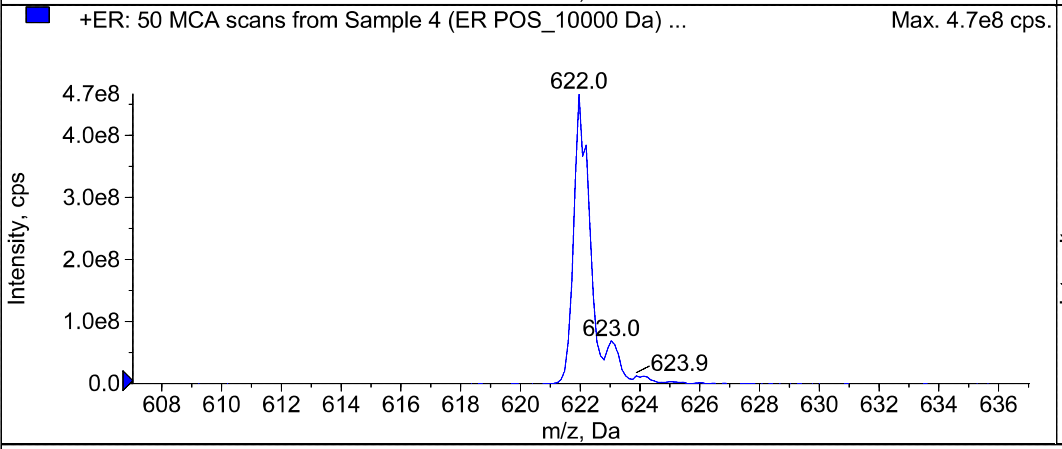
## Document history:

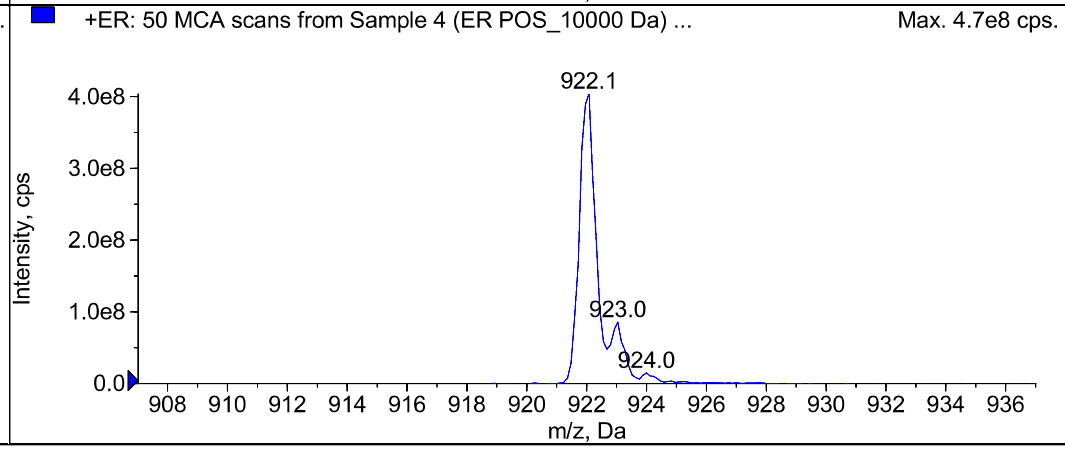
06 OCT 2016: Appendix ZEFPM003-2L: Removed requirements to fit Manufacturer's testing criteria.

© This document is the property of Zef Scientific and intended for Zef Scientific Inc trained engineers use only. No copying, all or partial, is permitted without prior authorization.




Peak List for " +ER: 50 MCA scans from Sample 4 (ER POS_10000 Da) of TRAP ER with NEW Pulse Manifold.wiff (Turbo Spray)"

| | Target Mass (Da) | Found At (Da) | Intensity (cps) | Width (Da) | Mass Shift (Da) |
|---|---|---|---|---|---|
| 1 | 118.0870 | 118.0702 | 3.0667e7 | 0.4146 | 0.0168 |
| 2 | 322.0490 | 322.0509 | 4.3500e7 | 0.4945 | -1.9159e-3 |
| 3 | 622.0290 | 622.0370 | 4.6717e8 | 0.5757 | -8.0044e-3 |
| 4 | 922.0100 | 922.0101 | 4.0400e8 | 0.5732 | -1.4148e-4 |

| Battelle Standard ID | Description | Intermediate Solutions | Battelle Reagent ID (purchased solutions) |
|---|---|---|---|
| JX29 | PFAS Branched Solution (~5,000 ng/L) | JX28 | 180618-02 |
| JX29 | PFAS Branched Solution (~5,000 ng/L) | JX28 | 180618-03 |
| JX29 | PFAS Branched Solution (~5,000 ng/L) | JX28 | 180618-04 |
| JX29 | PFAS Branched Solution (~5,000 ng/L) | JX28 | 180618-06 |
| JX29 | PFAS Branched Solution (~5,000 ng/L) | JX28 | 180618-07 |
| JY26 | PFAS - DoD Internal Standard Spiking Solution | JY25 | 180726-04 |
| JY28 | PFAS - DoD Low Level Labelled Extracted Internal Standards (SIS) | JY27 | 180726-05 |
| JY38 | PFAS - DoD Calibration L1 | JY27 | 180726-05 |
| JY38 | PFAS - DoD Calibration L1 | JY25 | 180726-04 |
| JY38 | PFAS - DoD Calibration L1 | JY23 | 180705-02 |
| JY39 | PFAS - DoD Calibration L2 | JY23 | 180705-02 |
| JY39 | PFAS - DoD Calibration L2 | JY25 | 180726-04 |
| JY39 | PFAS - DoD Calibration L2 | JY27 | 180726-05 |
| JY40 | PFAS - DoD Calibration L3 | JY27 | 180726-05 |
| JY40 | PFAS - DoD Calibration L3 | JY25 | 180726-04 |
| JY40 | PFAS - DoD Calibration L3 | JY24 | 180705-02 |
| JY41 | PFAS - DoD Calibration L4 | JY24 | 180705-02 |
| JY41 | PFAS - DoD Calibration L4 | JY25 | 180726-04 |
| JY41 | PFAS - DoD Calibration L4 | JY27 | 180726-05 |
| JY42 | PFAS - DoD Calibration L5 | JY27 | 180726-05 |
| JY42 | PFAS - DoD Calibration L5 | JY25 | 180726-04 |
| JY42 | PFAS - DoD Calibration L5 | JY24 | 180705-02 |
| JY43 | PFAS - DoD Calibration L6 | JY24 | 180705-02 |
| JY43 | PFAS - DoD Calibration L6 | JY25 | 180726-04 |
| JY43 | PFAS - DoD Calibration L6 | JY27 | 180726-05 |
| JY44 | PFAS - DoD Calibration L7 | JY27 | 180726-05 |
| JY44 | PFAS - DoD Calibration L7 | JY25 | 180726-04 |
| JY44 | PFAS - DoD Calibration L7 | JY24 | 180705-02 |
| JY45 | PFAS - DoD ICC | JZ27 | 171025-01 |
| JY45 | PFAS - DoD ICC | JY25 | 180726-04 |
| JY45 | PFAS - DoD ICC | JY27 | 180726-05 |
| JY46 | PFAS - DoD Instrument Blank | JY27 | 180726-05 |
| JY46 | PFAS - DoD Instrument Blank | JY25 | 180726-04 |
| JZ27 | PFAS - DoD Second Source LCS/MS Solution | - | 171025-01 |

BATTELLE
It can be done

# Standard Solution Prep Form II

Approved: ☑

**Standard Laboratory ID Number:** JX28

**Description:** PFAS Branched Standard Stock

| Assigned Lab ID (from receipt log) | Chemical Name: | Source | Stock (ug/mL) | Expir. Date | Purity (%) | Density (g/mL) | Amount Taken | Conv. Fact. | Final Vol. (mL) | Std. Conc. (ug/mL) |
|---|---|---|---|---|---|---|---|---|---|---|
| 180618-02 | Branched NEtFOSAA Standard (50 µg/mL) | Neat | ~50.000000 | 01/17/23 | --- | --- | 100 uL | 1 | 10 | ~0.5000 |
| 180618-03 | Branched NMeFOSAA Standard (50 µg/mL) | Neat | ~50.000000 | 01/17/23 | --- | --- | 100 uL | 1 | 10 | ~0.5000 |
| 180618-04 | PFOA - Technical Mix | Neat | ~50.000000 | 02/16/22 | --- | --- | 100 uL | 1 | 10 | ~0.5000 |
| 180618-06 | Branched PFHxS Standard (50 µg/mL) | Neat | ~50.000000 | 01/04/22 | --- | --- | 100 uL | 1 | 10 | ~0.5000 |
| 180618-07 | Branched PFOS Standard (50 µg/mL) | Neat | ~50.000000 | 01/12/22 | --- | --- | 100 uL | 1 | 10 | ~0.5000 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 6/18/2018 **Expiration Date:** 6/18/2019

**Solution Volume** 25 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Balance ID:** _____

**Comment:**

| Solvent: | Lot: |
|---|---|
| Methanol (HPLC) | 179315 |

**Approved By:** Thorn, Jonathan **Date:** 7/3/2018 8:10:00 AM

BATTELLE

It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JX28

**Description:** PFAS Branched Standard Stock

**Stock Id:** 180618-02

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| N-ethylperfluoro-octanesulfonamidoacetic acid | 100 | 50.00 | 1 | 100.000 | 1 | 10 | 0.50000 |

**Stock Id:** 180618-03

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| N-methylperfluoro-1-octanesulfonamidoacetic acid | 100 | 50.00 | 1 | 100.000 | 1 | 10 | 0.50000 |

**Stock Id:** 180618-04

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| Perfluoro-n-octanoic Acid | 100 | 50.00 | 1 | 100.000 | 1 | 10 | 0.50000 |

**Stock Id:** 180618-06

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| Perfluoro-1-hexanesulfonate | 100 | 50.00 | 1 | 100.000 | 1 | 10 | 0.50000 |

**Stock Id:** 180618-07

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| Perfluoro-1-octanesulfonate | 100 | 50.00 | 1 | 100.000 | 1 | 10 | 0.50000 |

**Final Concentrations:**

| Analyte: | Conc (ug/mL): |
|---|---|
| N-ethylperfluoro-octanesulfonamidoacetic acid | .50000 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | .50000 |
| Perfluoro-1-hexanesulfonate | .50000 |
| Perfluoro-1-octanesulfonate | .50000 |
| Perfluoro-n-octanoic Acid | .50000 |

**Syringes/Pipettes:**

| Stock ID: | Type: | Battelle ID: |
|---|---|---|
| 180618-02 | Pipette | I0793912B |
| 180618-03 | Pipette | I0793912B |
| 180618-04 | Pipette | I0793912B |
| 180618-06 | Pipette | I0793912B |
| 180618-07 | Pipette | I0793912B |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 6/18/2018 **Expiration Date:** 6/18/2019

**Solution Volume** 25 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:**

**Approved By:** Thorn, Jonathan **Date:** 7/3/2018 8:10:00 AM

BATTELLE
It can be done

# Standard Solution Prep Form II

Approved: ☑

**Standard Laboratory ID Number:** **JX29**

**Description:** PFAS Branched Solution (~5,000 ng/L)

| Assigned Lab ID (from receipt log) | Chemical Name: | Source | Stock (ug/mL) | Expir. Date | Purity (%) | Density (g/mL) | Amount Taken | Conv. Fact. | Final Vol. (mL) | Std. Conc. (ug/mL) |
|---|---|---|---|---|---|---|---|---|---|---|
| JX28 | PFAS Branched Standard Stock | Solution | ~0 | 06/18/19 | --- | --- | 100 uL | 1 | 10 | ~0.0000 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 6/18/2018 **Expiration Date:** 6/18/2019

**Solution Volume** 25 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Balance ID:**

**Comment:** 80:20 Methanol/Millipore Water

**Approved By:** Lizotte Jr, Robert **Date:** 7/2/2018 5:07:00 PM

BATTELLE

It can be done

## Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JX29

**Description:** PFAS Branched Solution (~5,000 ng/L)

**Stock Id:** JX28

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| N-ethylperfluoro-octanesulfonamidoacetic acid | 100 | 0.50 | --- | --- | 1 | 10 | 0.00500 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | 100 | 0.50 | --- | --- | 1 | 10 | 0.00500 |
| Perfluoro-1-hexanesulfonate | 100 | 0.50 | --- | --- | 1 | 10 | 0.00500 |
| Perfluoro-1-octanesulfonate | 100 | 0.50 | --- | --- | 1 | 10 | 0.00500 |
| Perfluoro-n-octanoic Acid | 100 | 0.50 | --- | --- | 1 | 10 | 0.00500 |

**Final Concentrations:**

| Analyte: | Conc (ug/mL): |
|---|---|
| N-ethylperfluoro-octanesulfonamidoacetic acid | .00500 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | .00500 |
| Perfluoro-1-hexanesulfonate | .00500 |
| Perfluoro-1-octanesulfonate | .00500 |
| Perfluoro-n-octanoic Acid | .00500 |

**Syringes/Pipettes:**

| Stock ID: | Type: | Battelle ID: |
|---|---|---|
| JX28 | Pipette | I0793912B |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 6/18/2018 **Expiration Date:** 6/18/2019

**Solution Volume** 25 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80:20 Methanol/Millipore Water

**Approved By:** Lizotte Jr, Robert **Date:** 7/2/2018 5:07:00 PM

BATTELLE

It can be done

## Standard Solution Prep Form II

Approved: ☑

**Standard Laboratory ID Number:** JY23

**Description:** PFAS - DoD Low ICAL Stock

| Assigned Lab ID (from receipt log) | Chemical Name: | Source | Stock (ug/mL) | Expir. Date | Purity (%) | Density (g/mL) | Amount Taken | Conv. Fact. | Final Vol. (mL) | Std. Conc. (ug/mL) |
|---|---|---|---|---|---|---|---|---|---|---|
| 180705-02 | PFOA - DOD | Neat | ~1.000000 | 06/19/23 | --- | --- | 500 uL | 1 | 100 | ~0.0050 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 4 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Balance ID:** _____

**Comment:** 96/4 Methanol/milli-q water

**Approved By:** Thorn, Jonathan **Date:** 8/29/2018 10:10:00 AM

BATTELLE

It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY23

**Description:** PFAS - DoD Low ICAL Stock

**Stock Id:** 180705-02

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| (Na) 1H,1H,2H,2H-Perfluorodecane sulfonate | 500 | 1.01 | 1 | 100.000 | 1 | 100 | 0.00505 |
| (Na) 1H,1H,2H,2H-Perfluorohexane sulfonate | 500 | 1.01 | 1 | 100.000 | 1 | 100 | 0.00505 |
| (Na) 1H,1H,2H,2H-Perfluorooctane sulfonate | 500 | 1.00 | 1 | 100.000 | 1 | 100 | 0.00500 |
| (Na) Perfluoro-1-decanesulfonate | 500 | 1.01 | 1 | 100.000 | 1 | 100 | 0.00505 |
| (NA) Perfluoro-1-heptanesulfonate | 500 | 1.00 | 1 | 100.000 | 1 | 100 | 0.00500 |
| (Na) Perfluoro-1-nonanesulfonate | 500 | 1.01 | 1 | 100.000 | 1 | 100 | 0.00505 |
| N-ethylperfluoro-octanesulfonamidoacetic acid | 500 | 1.00 | 1 | 100.000 | 1 | 100 | 0.00500 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | 500 | 1.00 | 1 | 100.000 | 1 | 100 | 0.00500 |
| Perfluoro-1-butanesulfonate | 500 | 1.01 | 1 | 100.000 | 1 | 100 | 0.00505 |
| Perfluoro-1-hexanesulfonate | 500 | 1.01 | 1 | 100.000 | 1 | 100 | 0.00505 |
| Perfluoro-1-octanesulfonamide | 500 | 1.00 | 1 | 100.000 | 1 | 100 | 0.00500 |
| Perfluoro-1-octanesulfonate | 500 | 1.00 | 1 | 100.000 | 1 | 100 | 0.00500 |
| Perfluoro-n-butanoic Acid | 500 | 1.00 | 1 | 100.000 | 1 | 100 | 0.00500 |
| Perfluoro-n-decanoic Acid | 500 | 1.00 | 1 | 100.000 | 1 | 100 | 0.00500 |
| Perfluoro-n-dodecanoic acid | 500 | 1.00 | 1 | 100.000 | 1 | 100 | 0.00500 |
| Perfluoro-n-heptanoic Acid | 500 | 1.00 | 1 | 100.000 | 1 | 100 | 0.00500 |
| Perfluoro-n-hexanoic acid | 500 | 1.01 | 1 | 100.000 | 1 | 100 | 0.00505 |
| Perfluoro-n-octanoic Acid | 500 | 1.00 | 1 | 100.000 | 1 | 100 | 0.00500 |
| Perfluorononanoic Acid | 500 | 1.00 | 1 | 100.000 | 1 | 100 | 0.00500 |
| Perfluoro-n-pentanoic acid | 500 | 1.01 | 1 | 100.000 | 1 | 100 | 0.00505 |
| Perfluoro-n-tetradecanoic acid | 500 | 1.00 | 1 | 100.000 | 1 | 100 | 0.00500 |
| Perfluoro-n-tridecanoic acid | 500 | 1.00 | 1 | 100.000 | 1 | 100 | 0.00500 |
| Perfluoro-n-undecanoic acid | 500 | 1.00 | 1 | 100.000 | 1 | 100 | 0.00500 |
| Sodium perfluoro-1-pentanesulfonate | 500 | 1.00 | 1 | 100.000 | 1 | 100 | 0.00500 |

**Final Concentrations:**

| Analyte: | Conc (ug/mL): |
|---|---|
| (Na) 1H,1H,2H,2H-Perfluorodecane sulfonate | .00505 |
| (Na) 1H,1H,2H,2H-Perfluorohexane sulfonate | .00505 |
| (Na) 1H,1H,2H,2H-Perfluorooctane sulfonate | .00500 |
| (Na) Perfluoro-1-decanesulfonate | .00505 |
| (NA) Perfluoro-1-heptanesulfonate | .00500 |
| (Na) Perfluoro-1-nonanesulfonate | .00505 |
| N-ethylperfluoro-octanesulfonamidoacetic acid | .00500 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | .00500 |
| Perfluoro-1-butanesulfonate | .00505 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 4 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 96/4 Methanol/milli-q water

**Approved By:** Thorn, Jonathan **Date:** 8/29/2018 10:10:00 AM

BATTELLE

It can be done

## Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY23

**Description:** PFAS - DoD Low ICAL Stock

| | |
|---|---|
| Perfluoro-1-hexanesulfonate | .00505 |
| Perfluoro-1-octanesulfonamide | .00500 |
| Perfluoro-1-octanesulfonate | .00500 |
| Perfluoro-n-butanoic Acid | .00500 |
| Perfluoro-n-decanoic Acid | .00500 |
| Perfluoro-n-dodecanoic acid | .00500 |
| Perfluoro-n-heptanoic Acid | .00500 |
| Perfluoro-n-hexanoic acid | .00505 |
| Perfluoro-n-octanoic Acid | .00500 |
| Perfluorononanoic Acid | .00500 |
| Perfluoro-n-pentanoic acid | .00505 |
| Perfluoro-n-tetradecanoic acid | .00500 |
| Perfluoro-n-tridecanoic acid | .00500 |
| Perfluoro-n-undecanoic acid | .00500 |
| Sodium perfluoro-1-pentanesulfonate | .00500 |

**Syringes/Pipettes:**

| Stock ID: | Type: | Battelle ID: |
|---|---|---|
| 180705-02 | Pipette | B820865811 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 4 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 96/4 Methanol/milli-q water

**Approved By:** Thorn, Jonathan **Date:** 8/29/2018 10:10:00 AM

BATTELLE

It can be done

# Standard Solution Prep Form II

Approved: ☑

**Standard Laboratory ID Number:** JY24

**Description:** PFAS - DoD High ICAL Stock

| Assigned Lab ID (from receipt log) | Chemical Name: | Source | Stock (ug/mL) | Expir. Date | Purity (%) | Density (g/mL) | Amount Taken | Conv. Fact. | Final Vol. (mL) | Std. Conc. (ug/mL) |
|---|---|---|---|---|---|---|---|---|---|---|
| 180705-02 | PFOA - DOD | Neat | ~1.000000 | 06/19/23 | --- | --- | 500 uL | 1 | 10 | ~0.0500 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Balance ID:** _____

**Comment:** 96/4 Methanol/milli-q water

**Approved By:** Thorn, Jonathan **Date:** 8/29/2018 10:09:00 AM

BATTELLE

It can be done

## Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY24

**Description:** PFAS - DoD High ICAL Stock

**Stock Id:** 180705-02

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| (Na) 1H,1H,2H,2H-Perfluorodecane sulfonate | 500 | 1.01 | 1 | 100.000 | 1 | 10 | 0.05050 |
| (Na) 1H,1H,2H,2H-Perfluorohexane sulfonate | 500 | 1.01 | 1 | 100.000 | 1 | 10 | 0.05050 |
| (Na) 1H,1H,2H,2H-Perfluorooctane sulfonate | 500 | 1.00 | 1 | 100.000 | 1 | 10 | 0.05000 |
| (Na) Perfluoro-1-decanesulfonate | 500 | 1.01 | 1 | 100.000 | 1 | 10 | 0.05050 |
| (NA) Perfluoro-1-heptanesulfonate | 500 | 1.00 | 1 | 100.000 | 1 | 10 | 0.05000 |
| (Na) Perfluoro-1-nonanesulfonate | 500 | 1.01 | 1 | 100.000 | 1 | 10 | 0.05050 |
| N-ethylperfluoro-octanesulfonamidoacetic acid | 500 | 1.00 | 1 | 100.000 | 1 | 10 | 0.05000 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | 500 | 1.00 | 1 | 100.000 | 1 | 10 | 0.05000 |
| Perfluoro-1-butanesulfonate | 500 | 1.01 | 1 | 100.000 | 1 | 10 | 0.05050 |
| Perfluoro-1-hexanesulfonate | 500 | 1.01 | 1 | 100.000 | 1 | 10 | 0.05050 |
| Perfluoro-1-octanesulfonamide | 500 | 1.00 | 1 | 100.000 | 1 | 10 | 0.05000 |
| Perfluoro-1-octanesulfonate | 500 | 1.00 | 1 | 100.000 | 1 | 10 | 0.05000 |
| Perfluoro-n-butanoic Acid | 500 | 1.00 | 1 | 100.000 | 1 | 10 | 0.05000 |
| Perfluoro-n-decanoic Acid | 500 | 1.00 | 1 | 100.000 | 1 | 10 | 0.05000 |
| Perfluoro-n-dodecanoic acid | 500 | 1.00 | 1 | 100.000 | 1 | 10 | 0.05000 |
| Perfluoro-n-heptanoic Acid | 500 | 1.00 | 1 | 100.000 | 1 | 10 | 0.05000 |
| Perfluoro-n-hexanoic acid | 500 | 1.01 | 1 | 100.000 | 1 | 10 | 0.05050 |
| Perfluoro-n-octanoic Acid | 500 | 1.00 | 1 | 100.000 | 1 | 10 | 0.05000 |
| Perfluorononanoic Acid | 500 | 1.00 | 1 | 100.000 | 1 | 10 | 0.05000 |
| Perfluoro-n-pentanoic acid | 500 | 1.01 | 1 | 100.000 | 1 | 10 | 0.05050 |
| Perfluoro-n-tetradecanoic acid | 500 | 1.00 | 1 | 100.000 | 1 | 10 | 0.05000 |
| Perfluoro-n-tridecanoic acid | 500 | 1.00 | 1 | 100.000 | 1 | 10 | 0.05000 |
| Perfluoro-n-undecanoic acid | 500 | 1.00 | 1 | 100.000 | 1 | 10 | 0.05000 |
| Sodium perfluoro-1-pentanesulfonate | 500 | 1.00 | 1 | 100.000 | 1 | 10 | 0.05000 |

**Final Concentrations:**

| Analyte: | Conc (ug/mL): |
|---|---|
| (Na) 1H,1H,2H,2H-Perfluorodecane sulfonate | .05050 |
| (Na) 1H,1H,2H,2H-Perfluorohexane sulfonate | .05050 |
| (Na) 1H,1H,2H,2H-Perfluorooctane sulfonate | .05000 |
| (Na) Perfluoro-1-decanesulfonate | .05050 |
| (NA) Perfluoro-1-heptanesulfonate | .05000 |
| (Na) Perfluoro-1-nonanesulfonate | .05050 |
| N-ethylperfluoro-octanesulfonamidoacetic acid | .05000 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | .05000 |
| Perfluoro-1-butanesulfonate | .05050 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 96/4 Methanol/milli-q water

**Approved By:** Thorn, Jonathan **Date:** 8/29/2018 10:09:00 AM

BATTELLE

It can be done

## Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY24

**Description:** PFAS - DoD High ICAL Stock

| | |
|---|---|
| Perfluoro-1-hexanesulfonate | .05050 |
| Perfluoro-1-octanesulfonamide | .05000 |
| Perfluoro-1-octanesulfonate | .05000 |
| Perfluoro-n-butanoic Acid | .05000 |
| Perfluoro-n-decanoic Acid | .05000 |
| Perfluoro-n-dodecanoic acid | .05000 |
| Perfluoro-n-heptanoic Acid | .05000 |
| Perfluoro-n-hexanoic acid | .05050 |
| Perfluoro-n-octanoic Acid | .05000 |
| Perfluorononanoic Acid | .05000 |
| Perfluoro-n-pentanoic acid | .05050 |
| Perfluoro-n-tetradecanoic acid | .05000 |
| Perfluoro-n-tridecanoic acid | .05000 |
| Perfluoro-n-undecanoic acid | .05000 |
| Sodium perfluoro-1-pentanesulfonate | .05000 |

**Syringes/Pipettes:**

| Stock ID: | Type: | Battelle ID: |
|---|---|---|
| 180705-02 | Pipette | B820865811 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 96/4 Methanol/milli-q water

**Approved By:** Thorn, Jonathan **Date:** 8/29/2018 10:09:00 AM

BATTELLE

It can be done

# Standard Solution Prep Form II

Approved: ☑

**Standard Laboratory ID Number:** JY25

**Description:** PFAS - DoD Internal Standard Stock Solution

| Assigned Lab ID (from receipt log) | Chemical Name: | Source | Stock (ug/mL) | Expir. Date | Purity (%) | Density (g/mL) | Amount Taken | Conv. Fact. | Final Vol. (mL) | Std. Conc. (ug/mL) |
|---|---|---|---|---|---|---|---|---|---|---|
| 180726-04 | Mass-labelled PFAS injection standards | Neat | ~2.000000 | 05/02/22 | --- | --- | 625 uL | 1 | 25 | ~0.0500 |

| | | | |
|---|---|---|---|
| **Solution Prepared By:** Schultz, Stephanie | **Date Prepared:** 7/16/2018 | **Expiration Date:** | 7/16/2019 |
| **Solution Volume** 40 mL X 1 Vials | **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107 | | |

**Balance ID:**

**Comment:** 96/4 Methanol/Milli-q water ( RP-180803-1)

**Approved By:** Thorn, Jonathan **Date:** 8/29/2018 10:09:00 AM

BATTELLE

It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY25

**Description:** PFAS - DoD Internal Standard Stock Solution

**Stock Id:** 180726-04

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| 13C2-PFDA | 625 | 2.00 | 1 | 100.000 | 1 | 25 | 0.05000 |
| 13C2-PFOA | 625 | 2.00 | 1 | 100.000 | 1 | 25 | 0.05000 |
| 13C3-PFBA | 625 | 2.00 | 1 | 100.000 | 1 | 25 | 0.05000 |
| 13C4-PFOS | 625 | 1.91 | 1 | 100.000 | 1 | 25 | 0.04785 |

**Final Concentrations:**

| Analyte: | Conc (ug/mL): |
|---|---|
| 13C2-PFDA | .05000 |
| 13C2-PFOA | .05000 |
| 13C3-PFBA | .05000 |
| 13C4-PFOS | .04785 |

**Syringes/Pipettes:**

| Stock ID: | Type: | Battelle ID: |
|---|---|---|
| 180726-04 | Pipette | B820865811 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 96/4 Methanol/Milli-q water ( RP-180803-1)

**Approved By:** Thorn, Jonathan **Date:** 8/29/2018 10:09:00 AM

BATTELLE
It can be done

# Standard Solution Prep Form II

Approved: ☑

**Standard Laboratory ID Number:** JY26

**Description:** PFAS - DoD Internal Standard Spiking Solution

| Assigned Lab ID (from receipt log) | Chemical Name: | Source | Stock (ug/mL) | Expir. Date | Purity (%) | Density (g/mL) | Amount Taken | Conv. Fact. | Final Vol. (mL) | Std. Conc. (ug/mL) |
|---|---|---|---|---|---|---|---|---|---|---|
| JY25 | PFAS - DoD Internal Standard Stock Solution | Solution | ~0 | 07/16/19 | --- | --- | 2500 uL | 1 | 25 | ~0.0000 |

| | | | |
|---|---|---|---|
| **Solution Prepared By:** Schultz, Stephanie | **Date Prepared:** 7/16/2018 | **Expiration Date:** | 7/16/2019 |
| **Solution Volume** 40 **mL X** 1 **Vials** | **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107 | | |

**Balance ID:** _____

**Comment:** 96/4 Methanol/Milli-q water ( RP-180803-1)

**Approved By:** Schumitz, Denise **Date:** 8/8/2018 9:16:00 AM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY26

**Description:** PFAS - DoD Internal Standard Spiking Solution

**Stock Id:** JY25

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| 13C2-PFDA | 2500 | 0.05 | --- | --- | 1 | 25 | 0.00500 |
| 13C2-PFOA | 2500 | 0.05 | --- | --- | 1 | 25 | 0.00500 |
| 13C3-PFBA | 2500 | 0.05 | --- | --- | 1 | 25 | 0.00500 |
| 13C4-PFOS | 2500 | 0.05 | --- | --- | 1 | 25 | 0.00479 |

**Final Concentrations:**

| Analyte: | Conc (ug/mL): |
|---|---|
| 13C2-PFDA | .00500 |
| 13C2-PFOA | .00500 |
| 13C3-PFBA | .00500 |
| 13C4-PFOS | .00479 |

**Syringes/Pipettes:**

| Stock ID: | Type: | Battelle ID: |
|---|---|---|
| JY25 | Pipette | OU16914 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 96/4 Methanol/Milli-q water ( RP-180803-1)

**Approved By:** Schumitz, Denise **Date:** 8/8/2018 9:16:00 AM

BATTELLE

It can be done

# Standard Solution Prep Form II

Approved: ☑

**Standard Laboratory ID Number:** JY27

**Description:** PFAS - DoD High Level Labelled Extracted Internal Standards (SIS)

| Assigned Lab ID (from receipt log) | Chemical Name: | Source | Stock (ug/mL) | Expir. Date | Purity (%) | Density (g/mL) | Amount Taken | Conv. Fact. | Final Vol. (mL) | Std. Conc. (ug/mL) |
|---|---|---|---|---|---|---|---|---|---|---|
| 180726-05 | Mass-labelled PFAS Extraction Standard Solution | Neat | ~1.000000 | 02/07/23 | --- | --- | 1000 uL | 1 | 20 | ~0.0500 |

| | | | |
|---|---|---|---|
| **Solution Prepared By:** Schultz, Stephanie | **Date Prepared:** | 7/16/2018 | **Expiration Date:** 7/16/2019 |
| **Solution Volume** 40 **mL X** 1 **Vials** | **Refrigerator/Freezer No:** | LC Laboratory: Refrigerator - R0107 | |

**Balance ID:** _____

**Comment:** 96/4 Methanol/Milli-q water (RP-180803-1)

**Approved By:** Schumitz, Denise **Date:** 8/8/2018 9:17:00 AM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY27

**Description:** PFAS - DoD High Level Labelled Extracted Internal Standards (SIS)

**Stock Id:** 180726-05

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| 13C2-4:2FTS | 1000 | 0.94 | 1 | 100.000 | 1 | 20 | 0.04675 |
| 13C2-6:2FTS | 1000 | 0.95 | 1 | 100.000 | 1 | 20 | 0.04745 |
| 13C2-8:2FTS | 1000 | 0.96 | 1 | 100.000 | 1 | 20 | 0.04790 |
| 13C2-PFDoA | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| 13C2-PFTeDA | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| 13C3-PFBS | 1000 | 0.93 | 1 | 100.000 | 1 | 20 | 0.04645 |
| 13C3-PFHxS | 1000 | 0.95 | 1 | 100.000 | 1 | 20 | 0.04730 |
| 13C4-PFBA | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| 13C4-PFHpA | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| 13C5-PFHxA | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| 13C5-PFPeA | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| 13C6-PFDA | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| 13C7-PFUnA | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| 13C8-FOSA | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| 13C8-PFOA | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| 13C8-PFOS | 1000 | 0.96 | 1 | 100.000 | 1 | 20 | 0.04785 |
| 13C9-PFNA | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| d3-MeFOSAA | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| d5-EtFOSAA | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |

**Final Concentrations:**

| Analyte: | Conc (ug/mL): |
|---|---|
| 13C2-4:2FTS | .04675 |
| 13C2-6:2FTS | .04745 |
| 13C2-8:2FTS | .04790 |
| 13C2-PFDoA | .05000 |
| 13C2-PFTeDA | .05000 |
| 13C3-PFBS | .04645 |
| 13C3-PFHxS | .04730 |
| 13C4-PFBA | .05000 |
| 13C4-PFHpA | .05000 |
| 13C5-PFHxA | .05000 |
| 13C5-PFPeA | .05000 |
| 13C6-PFDA | .05000 |
| 13C7-PFUnA | .05000 |
| 13C8-FOSA | .05000 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 96/4 Methanol/Milli-q water (RP-180803-1)

**Approved By:** Schumitz, Denise **Date:** 8/8/2018 9:17:00 AM

BATTELLE

It can be done

## Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY27

**Description:** PFAS - DoD High Level Labelled Extracted Internal Standards (SIS)

| | |
|---|---|
| 13C8-PFOA | .05000 |
| 13C8-PFOS | .04785 |
| 13C9-PFNA | .05000 |
| d3-MeFOSAA | .05000 |
| d5-EtFOSAA | .05000 |

**Syringes/Pipettes:**

| Stock ID: | Type: | Battelle ID: |
|---|---|---|
| 180726-05 | Pipette | B820865811 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 96/4 Methanol/Milli-q water (RP-180803-1)

**Approved By:** Schumitz, Denise **Date:** 8/8/2018 9:17:00 AM

BATTELLE
It can be done

# Standard Solution Prep Form II

Approved: ☑

**Standard Laboratory ID Number:** JY28

**Description:** PFAS - DoD Low Level Labelled Extracted Internal Standards (SIS)

| Assigned Lab ID (from receipt log) | Chemical Name: | Source | Stock (ug/mL) | Expir. Date | Purity (%) | Density (g/mL) | Amount Taken | Conv. Fact. | Final Vol. (mL) | Std. Conc. (ug/mL) |
|---|---|---|---|---|---|---|---|---|---|---|
| JY27 | PFAS - DoD High Level Labelled Extracted Internal Standards (SIS) | Solution | ~0 | 07/16/19 | --- | --- | 2500 uL | 1 | 25 | ~0.0000 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Balance ID:**

**Comment:** 96/4 Methanol/Milli-q water (RP-180803-1)

**Approved By:** Schumitz, Denise **Date:** 8/8/2018 9:17:00 AM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY28

**Description:** PFAS - DoD Low Level Labelled Extracted Internal Standards (SIS)

**Stock Id:** JY27

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| 13C2-4:2FTS | 2500 | 0.05 | --- | --- | 1 | 25 | 0.00468 |
| 13C2-6:2FTS | 2500 | 0.05 | --- | --- | 1 | 25 | 0.00475 |
| 13C2-8:2FTS | 2500 | 0.05 | --- | --- | 1 | 25 | 0.00479 |
| 13C2-PFDoA | 2500 | 0.05 | --- | --- | 1 | 25 | 0.00500 |
| 13C2-PFTeDA | 2500 | 0.05 | --- | --- | 1 | 25 | 0.00500 |
| 13C3-PFBS | 2500 | 0.05 | --- | --- | 1 | 25 | 0.00465 |
| 13C3-PFHxS | 2500 | 0.05 | --- | --- | 1 | 25 | 0.00473 |
| 13C4-PFBA | 2500 | 0.05 | --- | --- | 1 | 25 | 0.00500 |
| 13C4-PFHpA | 2500 | 0.05 | --- | --- | 1 | 25 | 0.00500 |
| 13C5-PFHxA | 2500 | 0.05 | --- | --- | 1 | 25 | 0.00500 |
| 13C5-PFPeA | 2500 | 0.05 | --- | --- | 1 | 25 | 0.00500 |
| 13C6-PFDA | 2500 | 0.05 | --- | --- | 1 | 25 | 0.00500 |
| 13C7-PFUnA | 2500 | 0.05 | --- | --- | 1 | 25 | 0.00500 |
| 13C8-FOSA | 2500 | 0.05 | --- | --- | 1 | 25 | 0.00500 |
| 13C8-PFOA | 2500 | 0.05 | --- | --- | 1 | 25 | 0.00500 |
| 13C8-PFOS | 2500 | 0.05 | --- | --- | 1 | 25 | 0.00478 |
| 13C9-PFNA | 2500 | 0.05 | --- | --- | 1 | 25 | 0.00500 |
| d3-MeFOSAA | 2500 | 0.05 | --- | --- | 1 | 25 | 0.00500 |
| d5-EtFOSAA | 2500 | 0.05 | --- | --- | 1 | 25 | 0.00500 |

**Final Concentrations:**

| Analyte: | Conc (ug/mL): |
|---|---|
| 13C2-4:2FTS | .00468 |
| 13C2-6:2FTS | .00475 |
| 13C2-8:2FTS | .00479 |
| 13C2-PFDoA | .00500 |
| 13C2-PFTeDA | .00500 |
| 13C3-PFBS | .00465 |
| 13C3-PFHxS | .00473 |
| 13C4-PFBA | .00500 |
| 13C4-PFHpA | .00500 |
| 13C5-PFHxA | .00500 |
| 13C5-PFPeA | .00500 |
| 13C6-PFDA | .00500 |
| 13C7-PFUnA | .00500 |
| 13C8-FOSA | .00500 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 96/4 Methanol/Milli-q water (RP-180803-1)

**Approved By:** Schumitz, Denise **Date:** 8/8/2018 9:17:00 AM

BATTELLE

It can be done

## Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY28

**Description:** PFAS - DoD Low Level Labelled Extracted Internal Standards (SIS)

| | |
|---|---|
| 13C8-PFOA | .00500 |
| 13C8-PFOS | .00478 |
| 13C9-PFNA | .00500 |
| d3-MeFOSAA | .00500 |
| d5-EtFOSAA | .00500 |

**Syringes/Pipettes:**

| Stock ID: | Type: | Battelle ID: |
|---|---|---|
| JY27 | Pipette | OU16914 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 96/4 Methanol/Milli-q water (RP-180803-1)

**Approved By:** Schumitz, Denise **Date:** 8/8/2018 9:17:00 AM

BATTELLE
It can be done

# Standard Solution Prep Form II

Approved: ☑

**Standard Laboratory ID Number:** **JY38**

**Description:** PFAS - DoD Calibration L1

| Assigned Lab ID (from receipt log) | Chemical Name: | Source | Stock (ug/mL) | Expir. Date | Purity (%) | Density (g/mL) | Amount Taken | Conv. Fact. | Final Vol. (mL) | Std. Conc. (ug/mL) |
|---|---|---|---|---|---|---|---|---|---|---|
| JY23 | PFAS - DoD Low ICAL Stock | Solution | ~0 | 07/16/19 | --- | --- | 200 uL | 1 | 10 | ~0.0000 |
| JY25 | PFAS - DoD Internal Standard Stock Solution | Solution | ~0 | 07/16/19 | --- | --- | 50 uL | 1 | 10 | ~0.0000 |
| JY27 | PFAS - DoD High Level Labelled Extracted Internal Standards (SIS) | Solution | ~0 | 07/16/19 | --- | --- | 50 uL | 1 | 10 | ~0.0000 |

| | | | |
|---|---|---|---|
| **Solution Prepared By:** Schultz, Stephanie | **Date Prepared:** 7/16/2018 | **Expiration Date:** | 7/16/2019 |
| **Solution Volume** 40 **mL X** 1 **Vials** | **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107 | | |

**Balance ID:**

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:47:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY38

**Description:** PFAS - DoD Calibration L1

**Stock Id:** JY23

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| (Na) 1H,1H,2H,2H-Perfluorodecane sulfonate | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |
| (Na) 1H,1H,2H,2H-Perfluorohexane sulfonate | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |
| (Na) 1H,1H,2H,2H-Perfluorooctane sulfonate | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |
| (Na) Perfluoro-1-decanesulfonate | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |
| (NA) Perfluoro-1-heptanesulfonate | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |
| (Na) Perfluoro-1-nonanesulfonate | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |
| N-ethylperfluoro-octanesulfonamidoacetic acid | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |
| Perfluoro-1-butanesulfonate | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |
| Perfluoro-1-hexanesulfonate | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |
| Perfluoro-1-octanesulfonamide | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |
| Perfluoro-1-octanesulfonate | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |
| Perfluoro-n-butanoic Acid | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |
| Perfluoro-n-decanoic Acid | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |
| Perfluoro-n-dodecanoic acid | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |
| Perfluoro-n-heptanoic Acid | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |
| Perfluoro-n-hexanoic acid | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |
| Perfluoro-n-octanoic Acid | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |
| Perfluorononanoic Acid | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |
| Perfluoro-n-pentanoic acid | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |
| Perfluoro-n-tetradecanoic acid | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |
| Perfluoro-n-tridecanoic acid | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |
| Perfluoro-n-undecanoic acid | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |
| Sodium perfluoro-1-pentanesulfonate | 200 | 0.01 | --- | --- | 1 | 10 | 0.00010 |

**Stock Id:** JY25

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| 13C2-PFDA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C2-PFOA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C3-PFBA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C4-PFOS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |

**Stock Id:** JY27

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| 13C2-4:2FTS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00023 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:47:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY38

**Description:** PFAS - DoD Calibration L1

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 13C2-6:2FTS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C2-8:2FTS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C2-PFDoA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C2-PFTeDA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C3-PFBS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00023 |
| 13C3-PFHxS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C4-PFBA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C4-PFHpA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C5-PFHxA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C5-PFPeA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C6-PFDA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C7-PFUnA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C8-FOSA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C8-PFOA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C8-PFOS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C9-PFNA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| d3-MeFOSAA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| d5-EtFOSAA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |

**Final Concentrations:**

| Analyte: | Conc (ug/mL): |
|---|---|
| (Na) 1H,1H,2H,2H-Perfluorodecane sulfonate | .00010 |
| (Na) 1H,1H,2H,2H-Perfluorohexane sulfonate | .00010 |
| (Na) 1H,1H,2H,2H-Perfluorooctane sulfonate | .00010 |
| (Na) Perfluoro-1-decanesulfonate | .00010 |
| (NA) Perfluoro-1-heptanesulfonate | .00010 |
| (Na) Perfluoro-1-nonanesulfonate | .00010 |
| 13C2-4:2FTS | .00023 |
| 13C2-6:2FTS | .00024 |
| 13C2-8:2FTS | .00024 |
| 13C2-PFDA | .00025 |
| 13C2-PFDoA | .00025 |
| 13C2-PFOA | .00025 |
| 13C2-PFTeDA | .00025 |
| 13C3-PFBA | .00025 |
| 13C3-PFBS | .00023 |
| 13C3-PFHxS | .00024 |
| 13C4-PFBA | .00025 |
| 13C4-PFHpA | .00025 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:47:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number: JY38**

**Description:** PFAS - DoD Calibration L1

| | |
|---|---|
| 13C4-PFOS | .00024 |
| 13C5-PFHxA | .00025 |
| 13C5-PFPeA | .00025 |
| 13C6-PFDA | .00025 |
| 13C7-PFUnA | .00025 |
| 13C8-FOSA | .00025 |
| 13C8-PFOA | .00025 |
| 13C8-PFOS | .00024 |
| 13C9-PFNA | .00025 |
| d3-MeFOSAA | .00025 |
| d5-EtFOSAA | .00025 |
| N-ethylperfluoro-octanesulfonamidoacetic acid | .00010 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | .00010 |
| Perfluoro-1-butanesulfonate | .00010 |
| Perfluoro-1-hexanesulfonate | .00010 |
| Perfluoro-1-octanesulfonamide | .00010 |
| Perfluoro-1-octanesulfonate | .00010 |
| Perfluoro-n-butanoic Acid | .00010 |
| Perfluoro-n-decanoic Acid | .00010 |
| Perfluoro-n-dodecanoic acid | .00010 |
| Perfluoro-n-heptanoic Acid | .00010 |
| Perfluoro-n-hexanoic acid | .00010 |
| Perfluoro-n-octanoic Acid | .00010 |
| Perfluorononanoic Acid | .00010 |
| Perfluoro-n-pentanoic acid | .00010 |
| Perfluoro-n-tetradecanoic acid | .00010 |
| Perfluoro-n-tridecanoic acid | .00010 |
| Perfluoro-n-undecanoic acid | .00010 |
| Sodium perfluoro-1-pentanesulfonate | .00010 |

**Syringes/Pipettes:**

| Stock ID: | Type: | Battelle ID: |
|---|---|---|
| JY23 | Pipette | B814657482 |
| JY25 | Pipette | I0793912B |
| JY27 | Pipette | I0793912B |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:47:00 PM

BATTELLE
It can be done

# Standard Solution Prep Form II

Approved: ☑

**Standard Laboratory ID Number:** **JY39**

**Description:** PFAS - DoD Calibration L2

| Assigned Lab ID (from receipt log) | Chemical Name: | Source | Stock (ug/mL) | Expir. Date | Purity (%) | Density (g/mL) | Amount Taken | Conv. Fact. | Final Vol. (mL) | Std. Conc. (ug/mL) |
|---|---|---|---|---|---|---|---|---|---|---|
| JY23 | PFAS - DoD Low ICAL Stock | Solution | ~0 | 07/16/19 | --- | --- | 500 uL | 1 | 10 | ~0.0000 |
| JY27 | PFAS - DoD High Level Labelled Extracted Internal Standards (SIS) | Solution | ~0 | 07/16/19 | --- | --- | 50 uL | 1 | 10 | ~0.0000 |
| JY25 | PFAS - DoD Internal Standard Stock Solution | Solution | ~0 | 07/16/19 | --- | --- | 50 uL | 1 | 10 | ~0.0000 |

| | | | |
|---|---|---|---|
| **Solution Prepared By:** Schultz, Stephanie | **Date Prepared:** 7/16/2018 | **Expiration Date:** | 7/16/2019 |
| **Solution Volume** 40 **mL X** 1 **Vials** | **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107 | | |

**Balance ID:**

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY39

**Description:** PFAS - DoD Calibration L2

## Stock Id: JY23

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| (Na) 1H,1H,2H,2H-Perfluorodecane sulfonate | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |
| (Na) 1H,1H,2H,2H-Perfluorohexane sulfonate | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |
| (Na) 1H,1H,2H,2H-Perfluorooctane sulfonate | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |
| (Na) Perfluoro-1-decanesulfonate | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |
| (NA) Perfluoro-1-heptanesulfonate | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |
| (Na) Perfluoro-1-nonanesulfonate | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |
| N-ethylperfluoro-octanesulfonamidoacetic acid | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |
| Perfluoro-1-butanesulfonate | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |
| Perfluoro-1-hexanesulfonate | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |
| Perfluoro-1-octanesulfonamide | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |
| Perfluoro-1-octanesulfonate | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |
| Perfluoro-n-butanoic Acid | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |
| Perfluoro-n-decanoic Acid | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |
| Perfluoro-n-dodecanoic acid | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |
| Perfluoro-n-heptanoic Acid | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |
| Perfluoro-n-hexanoic acid | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |
| Perfluoro-n-octanoic Acid | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |
| Perfluorononanoic Acid | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |
| Perfluoro-n-pentanoic acid | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |
| Perfluoro-n-tetradecanoic acid | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |
| Perfluoro-n-tridecanoic acid | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |
| Perfluoro-n-undecanoic acid | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |
| Sodium perfluoro-1-pentanesulfonate | 500 | 0.01 | --- | --- | 1 | 10 | 0.00025 |

## Stock Id: JY25

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| 13C2-PFDA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C2-PFOA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C3-PFBA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C4-PFOS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |

## Stock Id: JY27

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| 13C2-4:2FTS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00023 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** **JY39**

**Description:** PFAS - DoD Calibration L2

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 13C2-6:2FTS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C2-8:2FTS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C2-PFDoA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C2-PFTeDA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C3-PFBS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00023 |
| 13C3-PFHxS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C4-PFBA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C4-PFHpA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C5-PFHxA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C5-PFPeA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C6-PFDA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C7-PFUnA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C8-FOSA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C8-PFOA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C8-PFOS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C9-PFNA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| d3-MeFOSAA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| d5-EtFOSAA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |

**Final Concentrations:**

| Analyte: | Conc (ug/mL): |
|---|---|
| (Na) 1H,1H,2H,2H-Perfluorodecane sulfonate | .00025 |
| (Na) 1H,1H,2H,2H-Perfluorohexane sulfonate | .00025 |
| (Na) 1H,1H,2H,2H-Perfluorooctane sulfonate | .00025 |
| (Na) Perfluoro-1-decanesulfonate | .00025 |
| (NA) Perfluoro-1-heptanesulfonate | .00025 |
| (Na) Perfluoro-1-nonanesulfonate | .00025 |
| 13C2-4:2FTS | .00023 |
| 13C2-6:2FTS | .00024 |
| 13C2-8:2FTS | .00024 |
| 13C2-PFDA | .00025 |
| 13C2-PFDoA | .00025 |
| 13C2-PFOA | .00025 |
| 13C2-PFTeDA | .00025 |
| 13C3-PFBA | .00025 |
| 13C3-PFBS | .00023 |
| 13C3-PFHxS | .00024 |
| 13C4-PFBA | .00025 |
| 13C4-PFHpA | .00025 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** **JY39**

**Description:** PFAS - DoD Calibration L2

| | |
|---|---|
| 13C4-PFOS | .00024 |
| 13C5-PFHxA | .00025 |
| 13C5-PFPeA | .00025 |
| 13C6-PFDA | .00025 |
| 13C7-PFUnA | .00025 |
| 13C8-FOSA | .00025 |
| 13C8-PFOA | .00025 |
| 13C8-PFOS | .00024 |
| 13C9-PFNA | .00025 |
| d3-MeFOSAA | .00025 |
| d5-EtFOSAA | .00025 |
| N-ethylperfluoro-octanesulfonamidoacetic acid | .00025 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | .00025 |
| Perfluoro-1-butanesulfonate | .00025 |
| Perfluoro-1-hexanesulfonate | .00025 |
| Perfluoro-1-octanesulfonamide | .00025 |
| Perfluoro-1-octanesulfonate | .00025 |
| Perfluoro-n-butanoic Acid | .00025 |
| Perfluoro-n-decanoic Acid | .00025 |
| Perfluoro-n-dodecanoic acid | .00025 |
| Perfluoro-n-heptanoic Acid | .00025 |
| Perfluoro-n-hexanoic acid | .00025 |
| Perfluoro-n-octanoic Acid | .00025 |
| Perfluorononanoic Acid | .00025 |
| Perfluoro-n-pentanoic acid | .00025 |
| Perfluoro-n-tetradecanoic acid | .00025 |
| Perfluoro-n-tridecanoic acid | .00025 |
| Perfluoro-n-undecanoic acid | .00025 |
| Sodium perfluoro-1-pentanesulfonate | .00025 |

**Syringes/Pipettes:**

| Stock ID: | Type: | Battelle ID: |
|---|---|---|
| JY23 | Pipette | B820865811 |
| JY25 | Pipette | I0793912B |
| JY27 | Pipette | I0793912B |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Prep Form II

Approved: ☑

**Standard Laboratory ID Number:** **JY40**

**Description:** PFAS - DoD Calibration L3

| Assigned Lab ID (from receipt log) | Chemical Name: | Source | Stock (ug/mL) | Expir. Date | Purity (%) | Density (g/mL) | Amount Taken | Conv. Fact. | Final Vol. (mL) | Std. Conc. (ug/mL) |
|---|---|---|---|---|---|---|---|---|---|---|
| JY24 | PFAS - DoD High ICAL Stock | Solution | ~1 | 07/16/19 | --- | --- | 100 uL | 1 | 10 | ~0.0100 |
| JY27 | PFAS - DoD High Level Labelled Extracted Internal Standards (SIS) | Solution | ~0 | 07/16/19 | --- | --- | 50 uL | 1 | 10 | ~0.0000 |
| JY25 | PFAS - DoD Internal Standard Stock Solution | Solution | ~0 | 07/16/19 | --- | --- | 50 uL | 1 | 10 | ~0.0000 |

| | | | |
|---|---|---|---|
| **Solution Prepared By:** Schultz, Stephanie | **Date Prepared:** 7/16/2018 | **Expiration Date:** | 7/16/2019 |
| **Solution Volume** 40 **mL X** 1 **Vials** | **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107 | | |

**Balance ID:**

**Comment:** 80/20 Methanol/milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY40

**Description:** PFAS - DoD Calibration L3

**Stock Id:** JY24

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| (Na) 1H,1H,2H,2H-Perfluorodecane sulfonate | 100 | 0.05 | --- | --- | 1 | 10 | 0.00051 |
| (Na) 1H,1H,2H,2H-Perfluorohexane sulfonate | 100 | 0.05 | --- | --- | 1 | 10 | 0.00051 |
| (Na) 1H,1H,2H,2H-Perfluorooctane sulfonate | 100 | 0.05 | --- | --- | 1 | 10 | 0.00050 |
| (Na) Perfluoro-1-decanesulfonate | 100 | 0.05 | --- | --- | 1 | 10 | 0.00051 |
| (NA) Perfluoro-1-heptanesulfonate | 100 | 0.05 | --- | --- | 1 | 10 | 0.00050 |
| (Na) Perfluoro-1-nonanesulfonate | 100 | 0.05 | --- | --- | 1 | 10 | 0.00051 |
| N-ethylperfluoro-octanesulfonamidoacetic acid | 100 | 0.05 | --- | --- | 1 | 10 | 0.00050 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | 100 | 0.05 | --- | --- | 1 | 10 | 0.00050 |
| Perfluoro-1-butanesulfonate | 100 | 0.05 | --- | --- | 1 | 10 | 0.00051 |
| Perfluoro-1-hexanesulfonate | 100 | 0.05 | --- | --- | 1 | 10 | 0.00051 |
| Perfluoro-1-octanesulfonamide | 100 | 0.05 | --- | --- | 1 | 10 | 0.00050 |
| Perfluoro-1-octanesulfonate | 100 | 0.05 | --- | --- | 1 | 10 | 0.00050 |
| Perfluoro-n-butanoic Acid | 100 | 0.05 | --- | --- | 1 | 10 | 0.00050 |
| Perfluoro-n-decanoic Acid | 100 | 0.05 | --- | --- | 1 | 10 | 0.00050 |
| Perfluoro-n-dodecanoic acid | 100 | 0.05 | --- | --- | 1 | 10 | 0.00050 |
| Perfluoro-n-heptanoic Acid | 100 | 0.05 | --- | --- | 1 | 10 | 0.00050 |
| Perfluoro-n-hexanoic acid | 100 | 0.05 | --- | --- | 1 | 10 | 0.00051 |
| Perfluoro-n-octanoic Acid | 100 | 0.05 | --- | --- | 1 | 10 | 0.00050 |
| Perfluorononanoic Acid | 100 | 0.05 | --- | --- | 1 | 10 | 0.00050 |
| Perfluoro-n-pentanoic acid | 100 | 0.05 | --- | --- | 1 | 10 | 0.00051 |
| Perfluoro-n-tetradecanoic acid | 100 | 0.05 | --- | --- | 1 | 10 | 0.00050 |
| Perfluoro-n-tridecanoic acid | 100 | 0.05 | --- | --- | 1 | 10 | 0.00050 |
| Perfluoro-n-undecanoic acid | 100 | 0.05 | --- | --- | 1 | 10 | 0.00050 |
| Sodium perfluoro-1-pentanesulfonate | 100 | 0.05 | --- | --- | 1 | 10 | 0.00050 |

**Stock Id:** JY25

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| 13C2-PFDA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C2-PFOA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C3-PFBA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C4-PFOS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |

**Stock Id:** JY27

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| 13C2-4:2FTS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00023 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY40

**Description:** PFAS - DoD Calibration L3

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 13C2-6:2FTS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C2-8:2FTS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C2-PFDoA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C2-PFTeDA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C3-PFBS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00023 |
| 13C3-PFHxS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C4-PFBA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C4-PFHpA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C5-PFHxA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C5-PFPeA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C6-PFDA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C7-PFUnA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C8-FOSA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C8-PFOA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C8-PFOS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C9-PFNA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| d3-MeFOSAA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| d5-EtFOSAA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |

**Final Concentrations:**

| Analyte: | Conc (ug/mL): |
|---|---|
| (Na) 1H,1H,2H,2H-Perfluorodecane sulfonate | .00051 |
| (Na) 1H,1H,2H,2H-Perfluorohexane sulfonate | .00051 |
| (Na) 1H,1H,2H,2H-Perfluorooctane sulfonate | .00050 |
| (Na) Perfluoro-1-decanesulfonate | .00051 |
| (NA) Perfluoro-1-heptanesulfonate | .00050 |
| (Na) Perfluoro-1-nonanesulfonate | .00051 |
| 13C2-4:2FTS | .00023 |
| 13C2-6:2FTS | .00024 |
| 13C2-8:2FTS | .00024 |
| 13C2-PFDA | .00025 |
| 13C2-PFDoA | .00025 |
| 13C2-PFOA | .00025 |
| 13C2-PFTeDA | .00025 |
| 13C3-PFBA | .00025 |
| 13C3-PFBS | .00023 |
| 13C3-PFHxS | .00024 |
| 13C4-PFBA | .00025 |
| 13C4-PFHpA | .00025 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** **JY40**

**Description:** PFAS - DoD Calibration L3

| | |
|---|---|
| 13C4-PFOS | .00024 |
| 13C5-PFHxA | .00025 |
| 13C5-PFPeA | .00025 |
| 13C6-PFDA | .00025 |
| 13C7-PFUnA | .00025 |
| 13C8-FOSA | .00025 |
| 13C8-PFOA | .00025 |
| 13C8-PFOS | .00024 |
| 13C9-PFNA | .00025 |
| d3-MeFOSAA | .00025 |
| d5-EtFOSAA | .00025 |
| N-ethylperfluoro-octanesulfonamidoacetic acid | .00050 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | .00050 |
| Perfluoro-1-butanesulfonate | .00051 |
| Perfluoro-1-hexanesulfonate | .00051 |
| Perfluoro-1-octanesulfonamide | .00050 |
| Perfluoro-1-octanesulfonate | .00050 |
| Perfluoro-n-butanoic Acid | .00050 |
| Perfluoro-n-decanoic Acid | .00050 |
| Perfluoro-n-dodecanoic acid | .00050 |
| Perfluoro-n-heptanoic Acid | .00050 |
| Perfluoro-n-hexanoic acid | .00051 |
| Perfluoro-n-octanoic Acid | .00050 |
| Perfluorononanoic Acid | .00050 |
| Perfluoro-n-pentanoic acid | .00051 |
| Perfluoro-n-tetradecanoic acid | .00050 |
| Perfluoro-n-tridecanoic acid | .00050 |
| Perfluoro-n-undecanoic acid | .00050 |
| Sodium perfluoro-1-pentanesulfonate | .00050 |

**Syringes/Pipettes:**

| Stock ID: | Type: | Battelle ID: |
|---|---|---|
| JY24 | Pipette | I0793912B |
| JY25 | Pipette | I0793912B |
| JY27 | Pipette | I0793912B |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Prep Form II

Approved: ☑

**Standard Laboratory ID Number:** **JY41**

**Description:** PFAS - DoD Calibration L4

| Assigned Lab ID (from receipt log) | Chemical Name: | Source | Stock (ug/mL) | Expir. Date | Purity (%) | Density (g/mL) | Amount Taken | Conv. Fact. | Final Vol. (mL) | Std. Conc. (ug/mL) |
|---|---|---|---|---|---|---|---|---|---|---|
| JY24 | PFAS - DoD High ICAL Stock | Solution | ~1 | 07/16/19 | --- | --- | 200 uL | 1 | 10 | ~0.0200 |
| JY27 | PFAS - DoD High Level Labelled Extracted Internal Standards (SIS) | Solution | ~0 | 07/16/19 | --- | --- | 50 uL | 1 | 10 | ~0.0000 |
| JY25 | PFAS - DoD Internal Standard Stock Solution | Solution | ~0 | 07/16/19 | --- | --- | 50 uL | 1 | 10 | ~0.0000 |

| | | | |
|---|---|---|---|
| **Solution Prepared By:** Schultz, Stephanie | **Date Prepared:** 7/16/2018 | **Expiration Date:** | 7/16/2019 |
| **Solution Volume** 40 **mL X** 1 **Vials** | **Refrigerator/Freezer No:** Storage Room: Refrigerator - R0105 | | |

**Balance ID:**

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY41

**Description:** PFAS - DoD Calibration L4

**Stock Id:** JY24

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| (Na) 1H,1H,2H,2H-Perfluorodecane sulfonate | 200 | 0.05 | --- | --- | 1 | 10 | 0.00101 |
| (Na) 1H,1H,2H,2H-Perfluorohexane sulfonate | 200 | 0.05 | --- | --- | 1 | 10 | 0.00101 |
| (Na) 1H,1H,2H,2H-Perfluorooctane sulfonate | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| (Na) Perfluoro-1-decanesulfonate | 200 | 0.05 | --- | --- | 1 | 10 | 0.00101 |
| (NA) Perfluoro-1-heptanesulfonate | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| (Na) Perfluoro-1-nonanesulfonate | 200 | 0.05 | --- | --- | 1 | 10 | 0.00101 |
| N-ethylperfluoro-octanesulfonamidoacetic acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Perfluoro-1-butanesulfonate | 200 | 0.05 | --- | --- | 1 | 10 | 0.00101 |
| Perfluoro-1-hexanesulfonate | 200 | 0.05 | --- | --- | 1 | 10 | 0.00101 |
| Perfluoro-1-octanesulfonamide | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Perfluoro-1-octanesulfonate | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Perfluoro-n-butanoic Acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Perfluoro-n-decanoic Acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Perfluoro-n-dodecanoic acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Perfluoro-n-heptanoic Acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Perfluoro-n-hexanoic acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00101 |
| Perfluoro-n-octanoic Acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Perfluorononanoic Acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Perfluoro-n-pentanoic acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00101 |
| Perfluoro-n-tetradecanoic acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Perfluoro-n-tridecanoic acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Perfluoro-n-undecanoic acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Sodium perfluoro-1-pentanesulfonate | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |

**Stock Id:** JY25

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| 13C2-PFDA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C2-PFOA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C3-PFBA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C4-PFOS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |

**Stock Id:** JY27

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| 13C2-4:2FTS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00023 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** Storage Room: Refrigerator - R0105

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

## Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY41

**Description:** PFAS - DoD Calibration L4

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 13C2-6:2FTS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C2-8:2FTS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C2-PFDoA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C2-PFTeDA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C3-PFBS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00023 |
| 13C3-PFHxS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C4-PFBA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C4-PFHpA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C5-PFHxA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C5-PFPeA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C6-PFDA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C7-PFUnA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C8-FOSA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C8-PFOA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C8-PFOS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C9-PFNA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| d3-MeFOSAA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| d5-EtFOSAA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |

**Final Concentrations:**

| Analyte: | Conc (ug/mL): |
|---|---|
| (Na) 1H,1H,2H,2H-Perfluorodecane sulfonate | .00101 |
| (Na) 1H,1H,2H,2H-Perfluorohexane sulfonate | .00101 |
| (Na) 1H,1H,2H,2H-Perfluorooctane sulfonate | .00100 |
| (Na) Perfluoro-1-decanesulfonate | .00101 |
| (NA) Perfluoro-1-heptanesulfonate | .00100 |
| (Na) Perfluoro-1-nonanesulfonate | .00101 |
| 13C2-4:2FTS | .00023 |
| 13C2-6:2FTS | .00024 |
| 13C2-8:2FTS | .00024 |
| 13C2-PFDA | .00025 |
| 13C2-PFDoA | .00025 |
| 13C2-PFOA | .00025 |
| 13C2-PFTeDA | .00025 |
| 13C3-PFBA | .00025 |
| 13C3-PFBS | .00023 |
| 13C3-PFHxS | .00024 |
| 13C4-PFBA | .00025 |
| 13C4-PFHpA | .00025 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** Storage Room: Refrigerator - R0105

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** **JY41**

**Description:** PFAS - DoD Calibration L4

| | |
|---|---|
| 13C4-PFOS | .00024 |
| 13C5-PFHxA | .00025 |
| 13C5-PFPeA | .00025 |
| 13C6-PFDA | .00025 |
| 13C7-PFUnA | .00025 |
| 13C8-FOSA | .00025 |
| 13C8-PFOA | .00025 |
| 13C8-PFOS | .00024 |
| 13C9-PFNA | .00025 |
| d3-MeFOSAA | .00025 |
| d5-EtFOSAA | .00025 |
| N-ethylperfluoro-octanesulfonamidoacetic acid | .00100 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | .00100 |
| Perfluoro-1-butanesulfonate | .00101 |
| Perfluoro-1-hexanesulfonate | .00101 |
| Perfluoro-1-octanesulfonamide | .00100 |
| Perfluoro-1-octanesulfonate | .00100 |
| Perfluoro-n-butanoic Acid | .00100 |
| Perfluoro-n-decanoic Acid | .00100 |
| Perfluoro-n-dodecanoic acid | .00100 |
| Perfluoro-n-heptanoic Acid | .00100 |
| Perfluoro-n-hexanoic acid | .00101 |
| Perfluoro-n-octanoic Acid | .00100 |
| Perfluorononanoic Acid | .00100 |
| Perfluoro-n-pentanoic acid | .00101 |
| Perfluoro-n-tetradecanoic acid | .00100 |
| Perfluoro-n-tridecanoic acid | .00100 |
| Perfluoro-n-undecanoic acid | .00100 |
| Sodium perfluoro-1-pentanesulfonate | .00100 |

**Syringes/Pipettes:**

| Stock ID: | Type: | Battelle ID: |
|---|---|---|
| JY24 | Pipette | B814657482 |
| JY25 | Pipette | I0793912B |
| JY27 | Pipette | I0793912B |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** Storage Room: Refrigerator - R0105

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Prep Form II

Approved: ☑

**Standard Laboratory ID Number:** **JY42**

**Description:** PFAS - DoD Calibration L5

| Assigned Lab ID (from receipt log) | Chemical Name: | Source | Stock (ug/mL) | Expir. Date | Purity (%) | Density (g/mL) | Amount Taken | Conv. Fact. | Final Vol. (mL) | Std. Conc. (ug/mL) |
|---|---|---|---|---|---|---|---|---|---|---|
| JY24 | PFAS - DoD High ICAL Stock | Solution | ~1 | 07/16/19 | --- | --- | 500 uL | 1 | 10 | ~0.0500 |
| JY27 | PFAS - DoD High Level Labelled Extracted Internal Standards (SIS) | Solution | ~0 | 07/16/19 | --- | --- | 50 uL | 1 | 10 | ~0.0000 |
| JY25 | PFAS - DoD Internal Standard Stock Solution | Solution | ~0 | 07/16/19 | --- | --- | 50 uL | 1 | 10 | ~0.0000 |

| | | | |
|---|---|---|---|
| **Solution Prepared By:** Schultz, Stephanie | **Date Prepared:** 7/16/2018 | **Expiration Date:** | 7/16/2019 |
| **Solution Volume** 40 **mL X** 1 **Vials** | **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107 | | |

**Balance ID:**

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY42

**Description:** PFAS - DoD Calibration L5

**Stock Id:** JY24

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| (Na) 1H,1H,2H,2H-Perfluorodecane sulfonate | 500 | 0.05 | --- | --- | 1 | 10 | 0.00253 |
| (Na) 1H,1H,2H,2H-Perfluorohexane sulfonate | 500 | 0.05 | --- | --- | 1 | 10 | 0.00253 |
| (Na) 1H,1H,2H,2H-Perfluorooctane sulfonate | 500 | 0.05 | --- | --- | 1 | 10 | 0.00250 |
| (Na) Perfluoro-1-decanesulfonate | 500 | 0.05 | --- | --- | 1 | 10 | 0.00253 |
| (NA) Perfluoro-1-heptanesulfonate | 500 | 0.05 | --- | --- | 1 | 10 | 0.00250 |
| (Na) Perfluoro-1-nonanesulfonate | 500 | 0.05 | --- | --- | 1 | 10 | 0.00253 |
| N-ethylperfluoro-octanesulfonamidoacetic acid | 500 | 0.05 | --- | --- | 1 | 10 | 0.00250 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | 500 | 0.05 | --- | --- | 1 | 10 | 0.00250 |
| Perfluoro-1-butanesulfonate | 500 | 0.05 | --- | --- | 1 | 10 | 0.00253 |
| Perfluoro-1-hexanesulfonate | 500 | 0.05 | --- | --- | 1 | 10 | 0.00253 |
| Perfluoro-1-octanesulfonamide | 500 | 0.05 | --- | --- | 1 | 10 | 0.00250 |
| Perfluoro-1-octanesulfonate | 500 | 0.05 | --- | --- | 1 | 10 | 0.00250 |
| Perfluoro-n-butanoic Acid | 500 | 0.05 | --- | --- | 1 | 10 | 0.00250 |
| Perfluoro-n-decanoic Acid | 500 | 0.05 | --- | --- | 1 | 10 | 0.00250 |
| Perfluoro-n-dodecanoic acid | 500 | 0.05 | --- | --- | 1 | 10 | 0.00250 |
| Perfluoro-n-heptanoic Acid | 500 | 0.05 | --- | --- | 1 | 10 | 0.00250 |
| Perfluoro-n-hexanoic acid | 500 | 0.05 | --- | --- | 1 | 10 | 0.00253 |
| Perfluoro-n-octanoic Acid | 500 | 0.05 | --- | --- | 1 | 10 | 0.00250 |
| Perfluorononanoic Acid | 500 | 0.05 | --- | --- | 1 | 10 | 0.00250 |
| Perfluoro-n-pentanoic acid | 500 | 0.05 | --- | --- | 1 | 10 | 0.00253 |
| Perfluoro-n-tetradecanoic acid | 500 | 0.05 | --- | --- | 1 | 10 | 0.00250 |
| Perfluoro-n-tridecanoic acid | 500 | 0.05 | --- | --- | 1 | 10 | 0.00250 |
| Perfluoro-n-undecanoic acid | 500 | 0.05 | --- | --- | 1 | 10 | 0.00250 |
| Sodium perfluoro-1-pentanesulfonate | 500 | 0.05 | --- | --- | 1 | 10 | 0.00250 |

**Stock Id:** JY25

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| 13C2-PFDA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C2-PFOA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C3-PFBA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C4-PFOS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |

**Stock Id:** JY27

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| 13C2-4:2FTS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00023 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY42

**Description:** PFAS - DoD Calibration L5

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 13C2-6:2FTS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C2-8:2FTS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C2-PFDoA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C2-PFTeDA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C3-PFBS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00023 |
| 13C3-PFHxS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C4-PFBA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C4-PFHpA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C5-PFHxA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C5-PFPeA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C6-PFDA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C7-PFUnA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C8-FOSA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C8-PFOA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C8-PFOS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C9-PFNA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| d3-MeFOSAA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| d5-EtFOSAA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |

**Final Concentrations:**

| Analyte: | Conc (ug/mL): |
|---|---|
| (Na) 1H,1H,2H,2H-Perfluorodecane sulfonate | .00253 |
| (Na) 1H,1H,2H,2H-Perfluorohexane sulfonate | .00253 |
| (Na) 1H,1H,2H,2H-Perfluorooctane sulfonate | .00250 |
| (Na) Perfluoro-1-decanesulfonate | .00253 |
| (NA) Perfluoro-1-heptanesulfonate | .00250 |
| (Na) Perfluoro-1-nonanesulfonate | .00253 |
| 13C2-4:2FTS | .00023 |
| 13C2-6:2FTS | .00024 |
| 13C2-8:2FTS | .00024 |
| 13C2-PFDA | .00025 |
| 13C2-PFDoA | .00025 |
| 13C2-PFOA | .00025 |
| 13C2-PFTeDA | .00025 |
| 13C3-PFBA | .00025 |
| 13C3-PFBS | .00023 |
| 13C3-PFHxS | .00024 |
| 13C4-PFBA | .00025 |
| 13C4-PFHpA | .00025 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number: JY42**

**Description:** PFAS - DoD Calibration L5

| | |
|---|---|
| 13C4-PFOS | .00024 |
| 13C5-PFHxA | .00025 |
| 13C5-PFPeA | .00025 |
| 13C6-PFDA | .00025 |
| 13C7-PFUnA | .00025 |
| 13C8-FOSA | .00025 |
| 13C8-PFOA | .00025 |
| 13C8-PFOS | .00024 |
| 13C9-PFNA | .00025 |
| d3-MeFOSAA | .00025 |
| d5-EtFOSAA | .00025 |
| N-ethylperfluoro-octanesulfonamidoacetic acid | .00250 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | .00250 |
| Perfluoro-1-butanesulfonate | .00253 |
| Perfluoro-1-hexanesulfonate | .00253 |
| Perfluoro-1-octanesulfonamide | .00250 |
| Perfluoro-1-octanesulfonate | .00250 |
| Perfluoro-n-butanoic Acid | .00250 |
| Perfluoro-n-decanoic Acid | .00250 |
| Perfluoro-n-dodecanoic acid | .00250 |
| Perfluoro-n-heptanoic Acid | .00250 |
| Perfluoro-n-hexanoic acid | .00253 |
| Perfluoro-n-octanoic Acid | .00250 |
| Perfluorononanoic Acid | .00250 |
| Perfluoro-n-pentanoic acid | .00253 |
| Perfluoro-n-tetradecanoic acid | .00250 |
| Perfluoro-n-tridecanoic acid | .00250 |
| Perfluoro-n-undecanoic acid | .00250 |
| Sodium perfluoro-1-pentanesulfonate | .00250 |

**Syringes/Pipettes:**

| Stock ID: | Type: | Battelle ID: |
|---|---|---|
| JY24 | Pipette | B820865811 |
| JY25 | Pipette | I0793912B |
| JY27 | Pipette | I0793912B |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Prep Form II

Approved: ☑

**Standard Laboratory ID Number:** **JY43**

**Description:** PFAS - DoD Calibration L6

| Assigned Lab ID (from receipt log) | Chemical Name: | Source | Stock (ug/mL) | Expir. Date | Purity (%) | Density (g/mL) | Amount Taken | Conv. Fact. | Final Vol. (mL) | Std. Conc. (ug/mL) |
|---|---|---|---|---|---|---|---|---|---|---|
| JY24 | PFAS - DoD High ICAL Stock | Solution | ~1 | 07/16/19 | --- | --- | 1000 uL | 1 | 5 | ~0.2000 |
| JY27 | PFAS - DoD High Level Labelled Extracted Internal Standards (SIS) | Solution | ~0 | 07/16/19 | --- | --- | 25 uL | 1 | 5 | ~0.0000 |
| JY25 | PFAS - DoD Internal Standard Stock Solution | Solution | ~0 | 07/16/19 | --- | --- | 25 uL | 1 | 5 | ~0.0000 |

| | | | |
|---|---|---|---|
| **Solution Prepared By:** Schultz, Stephanie | **Date Prepared:** 7/16/2018 | **Expiration Date:** | 7/16/2019 |
| **Solution Volume** 40 **mL X** 1 **Vials** | **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107 | | |

**Balance ID:**

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY43

**Description:** PFAS - DoD Calibration L6

**Stock Id:** JY24

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| (Na) 1H,1H,2H,2H-Perfluorodecane sulfonate | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01010 |
| (Na) 1H,1H,2H,2H-Perfluorohexane sulfonate | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01010 |
| (Na) 1H,1H,2H,2H-Perfluorooctane sulfonate | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01000 |
| (Na) Perfluoro-1-decanesulfonate | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01010 |
| (NA) Perfluoro-1-heptanesulfonate | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01000 |
| (Na) Perfluoro-1-nonanesulfonate | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01010 |
| N-ethylperfluoro-octanesulfonamidoacetic acid | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01000 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01000 |
| Perfluoro-1-butanesulfonate | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01010 |
| Perfluoro-1-hexanesulfonate | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01010 |
| Perfluoro-1-octanesulfonamide | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01000 |
| Perfluoro-1-octanesulfonate | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01000 |
| Perfluoro-n-butanoic Acid | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01000 |
| Perfluoro-n-decanoic Acid | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01000 |
| Perfluoro-n-dodecanoic acid | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01000 |
| Perfluoro-n-heptanoic Acid | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01000 |
| Perfluoro-n-hexanoic acid | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01010 |
| Perfluoro-n-octanoic Acid | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01000 |
| Perfluorononanoic Acid | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01000 |
| Perfluoro-n-pentanoic acid | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01010 |
| Perfluoro-n-tetradecanoic acid | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01000 |
| Perfluoro-n-tridecanoic acid | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01000 |
| Perfluoro-n-undecanoic acid | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01000 |
| Sodium perfluoro-1-pentanesulfonate | 1000 | 0.05 | --- | --- | 1 | 5 | 0.01000 |

**Stock Id:** JY25

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| 13C2-PFDA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C2-PFOA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C3-PFBA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C4-PFOS | 25 | 0.05 | --- | --- | 1 | 5 | 0.00024 |

**Stock Id:** JY27

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| 13C2-4:2FTS | 25 | 0.05 | --- | --- | 1 | 5 | 0.00023 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY43

**Description:** PFAS - DoD Calibration L6

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 13C2-6:2FTS | 25 | 0.05 | --- | --- | 1 | 5 | 0.00024 |
| 13C2-8:2FTS | 25 | 0.05 | --- | --- | 1 | 5 | 0.00024 |
| 13C2-PFDoA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C2-PFTeDA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C3-PFBS | 25 | 0.05 | --- | --- | 1 | 5 | 0.00023 |
| 13C3-PFHxS | 25 | 0.05 | --- | --- | 1 | 5 | 0.00024 |
| 13C4-PFBA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C4-PFHpA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C5-PFHxA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C5-PFPeA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C6-PFDA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C7-PFUnA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C8-FOSA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C8-PFOA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C8-PFOS | 25 | 0.05 | --- | --- | 1 | 5 | 0.00024 |
| 13C9-PFNA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| d3-MeFOSAA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| d5-EtFOSAA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |

**Final Concentrations:**

| Analyte: | Conc (ug/mL): |
|---|---|
| (Na) 1H,1H,2H,2H-Perfluorodecane sulfonate | .01010 |
| (Na) 1H,1H,2H,2H-Perfluorohexane sulfonate | .01010 |
| (Na) 1H,1H,2H,2H-Perfluorooctane sulfonate | .01000 |
| (Na) Perfluoro-1-decanesulfonate | .01010 |
| (NA) Perfluoro-1-heptanesulfonate | .01000 |
| (Na) Perfluoro-1-nonanesulfonate | .01010 |
| 13C2-4:2FTS | .00023 |
| 13C2-6:2FTS | .00024 |
| 13C2-8:2FTS | .00024 |
| 13C2-PFDA | .00025 |
| 13C2-PFDoA | .00025 |
| 13C2-PFOA | .00025 |
| 13C2-PFTeDA | .00025 |
| 13C3-PFBA | .00025 |
| 13C3-PFBS | .00023 |
| 13C3-PFHxS | .00024 |
| 13C4-PFBA | .00025 |
| 13C4-PFHpA | .00025 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** **JY43**

**Description:** PFAS - DoD Calibration L6

| | |
|---|---|
| 13C4-PFOS | .00024 |
| 13C5-PFHxA | .00025 |
| 13C5-PFPeA | .00025 |
| 13C6-PFDA | .00025 |
| 13C7-PFUnA | .00025 |
| 13C8-FOSA | .00025 |
| 13C8-PFOA | .00025 |
| 13C8-PFOS | .00024 |
| 13C9-PFNA | .00025 |
| d3-MeFOSAA | .00025 |
| d5-EtFOSAA | .00025 |
| N-ethylperfluoro-octanesulfonamidoacetic acid | .01000 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | .01000 |
| Perfluoro-1-butanesulfonate | .01010 |
| Perfluoro-1-hexanesulfonate | .01010 |
| Perfluoro-1-octanesulfonamide | .01000 |
| Perfluoro-1-octanesulfonate | .01000 |
| Perfluoro-n-butanoic Acid | .01000 |
| Perfluoro-n-decanoic Acid | .01000 |
| Perfluoro-n-dodecanoic acid | .01000 |
| Perfluoro-n-heptanoic Acid | .01000 |
| Perfluoro-n-hexanoic acid | .01010 |
| Perfluoro-n-octanoic Acid | .01000 |
| Perfluorononanoic Acid | .01000 |
| Perfluoro-n-pentanoic acid | .01010 |
| Perfluoro-n-tetradecanoic acid | .01000 |
| Perfluoro-n-tridecanoic acid | .01000 |
| Perfluoro-n-undecanoic acid | .01000 |
| Sodium perfluoro-1-pentanesulfonate | .01000 |

**Syringes/Pipettes:**

| Stock ID: | Type: | Battelle ID: |
|---|---|---|
| JY24 | Pipette | B820865811 |
| JY25 | Pipette | I0793912B |
| JY27 | Pipette | I0793912B |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Prep Form II

Approved: ☑

**Standard Laboratory ID Number:** **JY44**

**Description:** PFAS - DoD Calibration L7

| Assigned Lab ID (from receipt log) | Chemical Name: | Source | Stock (ug/mL) | Expir. Date | Purity (%) | Density (g/mL) | Amount Taken | Conv. Fact. | Final Vol. (mL) | Std. Conc. (ug/mL) |
|---|---|---|---|---|---|---|---|---|---|---|
| JY24 | PFAS - DoD High ICAL Stock | Solution | ~1 | 07/16/19 | --- | --- | 2000 uL | 1 | 5 | ~0.4000 |
| JY27 | PFAS - DoD High Level Labelled Extracted Internal Standards (SIS) | Solution | ~0 | 07/16/19 | --- | --- | 25 uL | 1 | 5 | ~0.0000 |
| JY25 | PFAS - DoD Internal Standard Stock Solution | Solution | ~0 | 07/16/19 | --- | --- | 25 uL | 1 | 5 | ~0.0000 |

| | | | |
|---|---|---|---|
| **Solution Prepared By:** Schultz, Stephanie | **Date Prepared:** 7/16/2018 | **Expiration Date:** | 7/16/2019 |
| **Solution Volume** 40 **mL X** 1 **Vials** | **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107 | | |

**Balance ID:**

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY44

**Description:** PFAS - DoD Calibration L7

**Stock Id:** JY24

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| (Na) 1H,1H,2H,2H-Perfluorodecane sulfonate | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02020 |
| (Na) 1H,1H,2H,2H-Perfluorohexane sulfonate | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02020 |
| (Na) 1H,1H,2H,2H-Perfluorooctane sulfonate | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02000 |
| (Na) Perfluoro-1-decanesulfonate | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02020 |
| (NA) Perfluoro-1-heptanesulfonate | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02000 |
| (Na) Perfluoro-1-nonanesulfonate | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02020 |
| N-ethylperfluoro-octanesulfonamidoacetic acid | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02000 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02000 |
| Perfluoro-1-butanesulfonate | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02020 |
| Perfluoro-1-hexanesulfonate | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02020 |
| Perfluoro-1-octanesulfonamide | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02000 |
| Perfluoro-1-octanesulfonate | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02000 |
| Perfluoro-n-butanoic Acid | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02000 |
| Perfluoro-n-decanoic Acid | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02000 |
| Perfluoro-n-dodecanoic acid | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02000 |
| Perfluoro-n-heptanoic Acid | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02000 |
| Perfluoro-n-hexanoic acid | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02020 |
| Perfluoro-n-octanoic Acid | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02000 |
| Perfluorononanoic Acid | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02000 |
| Perfluoro-n-pentanoic acid | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02020 |
| Perfluoro-n-tetradecanoic acid | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02000 |
| Perfluoro-n-tridecanoic acid | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02000 |
| Perfluoro-n-undecanoic acid | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02000 |
| Sodium perfluoro-1-pentanesulfonate | 2000 | 0.05 | --- | --- | 1 | 5 | 0.02000 |

**Stock Id:** JY25

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| 13C2-PFDA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C2-PFOA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C3-PFBA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C4-PFOS | 25 | 0.05 | --- | --- | 1 | 5 | 0.00024 |

**Stock Id:** JY27

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| 13C2-4:2FTS | 25 | 0.05 | --- | --- | 1 | 5 | 0.00023 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY44

**Description:** PFAS - DoD Calibration L7

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 13C2-6:2FTS | 25 | 0.05 | --- | --- | 1 | 5 | 0.00024 |
| 13C2-8:2FTS | 25 | 0.05 | --- | --- | 1 | 5 | 0.00024 |
| 13C2-PFDoA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C2-PFTeDA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C3-PFBS | 25 | 0.05 | --- | --- | 1 | 5 | 0.00023 |
| 13C3-PFHxS | 25 | 0.05 | --- | --- | 1 | 5 | 0.00024 |
| 13C4-PFBA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C4-PFHpA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C5-PFHxA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C5-PFPeA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C6-PFDA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C7-PFUnA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C8-FOSA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C8-PFOA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| 13C8-PFOS | 25 | 0.05 | --- | --- | 1 | 5 | 0.00024 |
| 13C9-PFNA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| d3-MeFOSAA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |
| d5-EtFOSAA | 25 | 0.05 | --- | --- | 1 | 5 | 0.00025 |

**Final Concentrations:**

| Analyte: | Conc (ug/mL): |
|---|---|
| (Na) 1H,1H,2H,2H-Perfluorodecane sulfonate | .02020 |
| (Na) 1H,1H,2H,2H-Perfluorohexane sulfonate | .02020 |
| (Na) 1H,1H,2H,2H-Perfluorooctane sulfonate | .02000 |
| (Na) Perfluoro-1-decanesulfonate | .02020 |
| (NA) Perfluoro-1-heptanesulfonate | .02000 |
| (Na) Perfluoro-1-nonanesulfonate | .02020 |
| 13C2-4:2FTS | .00023 |
| 13C2-6:2FTS | .00024 |
| 13C2-8:2FTS | .00024 |
| 13C2-PFDA | .00025 |
| 13C2-PFDoA | .00025 |
| 13C2-PFOA | .00025 |
| 13C2-PFTeDA | .00025 |
| 13C3-PFBA | .00025 |
| 13C3-PFBS | .00023 |
| 13C3-PFHxS | .00024 |
| 13C4-PFBA | .00025 |
| 13C4-PFHpA | .00025 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** **JY44**

**Description:** PFAS - DoD Calibration L7

| | |
|---|---|
| 13C4-PFOS | .00024 |
| 13C5-PFHxA | .00025 |
| 13C5-PFPeA | .00025 |
| 13C6-PFDA | .00025 |
| 13C7-PFUnA | .00025 |
| 13C8-FOSA | .00025 |
| 13C8-PFOA | .00025 |
| 13C8-PFOS | .00024 |
| 13C9-PFNA | .00025 |
| d3-MeFOSAA | .00025 |
| d5-EtFOSAA | .00025 |
| N-ethylperfluoro-octanesulfonamidoacetic acid | .02000 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | .02000 |
| Perfluoro-1-butanesulfonate | .02020 |
| Perfluoro-1-hexanesulfonate | .02020 |
| Perfluoro-1-octanesulfonamide | .02000 |
| Perfluoro-1-octanesulfonate | .02000 |
| Perfluoro-n-butanoic Acid | .02000 |
| Perfluoro-n-decanoic Acid | .02000 |
| Perfluoro-n-dodecanoic acid | .02000 |
| Perfluoro-n-heptanoic Acid | .02000 |
| Perfluoro-n-hexanoic acid | .02020 |
| Perfluoro-n-octanoic Acid | .02000 |
| Perfluorononanoic Acid | .02000 |
| Perfluoro-n-pentanoic acid | .02020 |
| Perfluoro-n-tetradecanoic acid | .02000 |
| Perfluoro-n-tridecanoic acid | .02000 |
| Perfluoro-n-undecanoic acid | .02000 |
| Sodium perfluoro-1-pentanesulfonate | .02000 |

**Syringes/Pipettes:**

| Stock ID: | Type: | Battelle ID: |
|---|---|---|
| JY24 | Pipette | I0400533B |
| JY25 | Pipette | I0793912B |
| JY27 | Pipette | I0793912B |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Prep Form II

Approved: ☑

**Standard Laboratory ID Number:** **JY45**

**Description:** PFAS - DoD ICC

| Assigned Lab ID (from receipt log) | Chemical Name: | Source | Stock (ug/mL) | Expir. Date | Purity (%) | Density (g/mL) | Amount Taken | Conv. Fact. | Final Vol. (mL) | Std. Conc. (ug/mL) |
|---|---|---|---|---|---|---|---|---|---|---|
| JZ27 | PFAS - DoD Second Source LCS/MS Solution | Solution | ~0 | 07/25/19 | --- | --- | 200 uL | 1 | 10 | ~0.0000 |
| JY27 | PFAS - DoD High Level Labelled Extracted Internal Standards (SIS) | Solution | ~0 | 07/16/19 | --- | --- | 50 uL | 1 | 10 | ~0.0000 |
| JY25 | PFAS - DoD Internal Standard Stock Solution | Solution | ~0 | 07/16/19 | --- | --- | 50 uL | 1 | 10 | ~0.0000 |

| | | | |
|---|---|---|---|
| **Solution Prepared By:** Schultz, Stephanie | **Date Prepared:** 7/16/2018 | **Expiration Date:** | 7/16/2019 |
| **Solution Volume** 40 **mL X** 1 **Vials** | **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107 | | |

**Balance ID:**

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY45

**Description:** PFAS - DoD ICC

**Stock Id: JY25**

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| 13C2-PFDA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C2-PFOA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C3-PFBA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C4-PFOS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |

**Stock Id: JY27**

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| 13C2-4:2FTS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00023 |
| 13C2-6:2FTS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C2-8:2FTS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C2-PFDoA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C2-PFTeDA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C3-PFBS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00023 |
| 13C3-PFHxS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C4-PFBA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C4-PFHpA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C5-PFHxA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C5-PFPeA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C6-PFDA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C7-PFUnA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C8-FOSA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C8-PFOA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C8-PFOS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C9-PFNA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| d3-MeFOSAA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| d5-EtFOSAA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |

**Stock Id: JZ27**

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| (Na) 1H,1H,2H,2H-Perfluorodecane sulfonate | 200 | 0.05 | --- | --- | 1 | 10 | 0.00101 |
| (Na) 1H,1H,2H,2H-Perfluorohexane sulfonate | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| (Na) 1H,1H,2H,2H-Perfluorooctane sulfonate | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| (Na) Perfluoro-1-decanesulfonate | 200 | 0.05 | --- | --- | 1 | 10 | 0.00101 |
| (NA) Perfluoro-1-heptanesulfonate | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| (Na) Perfluoro-1-nonanesulfonate | 200 | 0.05 | --- | --- | 1 | 10 | 0.00101 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

## Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY45

**Description:** PFAS - DoD ICC

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| N-ethylperfluoro-octanesulfonamidoacetic acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Perfluoro-1-butanesulfonate | 200 | 0.05 | --- | --- | 1 | 10 | 0.00101 |
| Perfluoro-1-hexanesulfonate | 200 | 0.05 | --- | --- | 1 | 10 | 0.00101 |
| Perfluoro-1-octanesulfonamide | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Perfluoro-1-octanesulfonate | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Perfluoro-n-butanoic Acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Perfluoro-n-decanoic Acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Perfluoro-n-dodecanoic acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Perfluoro-n-heptanoic Acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Perfluoro-n-hexanoic acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00101 |
| Perfluoro-n-octanoic Acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Perfluorononanoic Acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Perfluoro-n-pentanoic acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Perfluoro-n-tetradecanoic acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Perfluoro-n-tridecanoic acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Perfluoro-n-undecanoic acid | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |
| Sodium perfluoro-1-pentanesulfonate | 200 | 0.05 | --- | --- | 1 | 10 | 0.00100 |

**Final Concentrations:**

| Analyte: | Conc (ug/mL): |
|---|---|
| (Na) 1H,1H,2H,2H-Perfluorodecane sulfonate | .00101 |
| (Na) 1H,1H,2H,2H-Perfluorohexane sulfonate | .00100 |
| (Na) 1H,1H,2H,2H-Perfluorooctane sulfonate | .00100 |
| (Na) Perfluoro-1-decanesulfonate | .00101 |
| (NA) Perfluoro-1-heptanesulfonate | .00100 |
| (Na) Perfluoro-1-nonanesulfonate | .00101 |
| 13C2-4:2FTS | .00023 |
| 13C2-6:2FTS | .00024 |
| 13C2-8:2FTS | .00024 |
| 13C2-PFDA | .00025 |
| 13C2-PFDoA | .00025 |
| 13C2-PFOA | .00025 |
| 13C2-PFTeDA | .00025 |
| 13C3-PFBA | .00025 |
| 13C3-PFBS | .00023 |
| 13C3-PFHxS | .00024 |
| 13C4-PFBA | .00025 |
| 13C4-PFHpA | .00025 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** **JY45**

**Description:** PFAS - DoD ICC

| | |
|---|---|
| 13C4-PFOS | .00024 |
| 13C5-PFHxA | .00025 |
| 13C5-PFPeA | .00025 |
| 13C6-PFDA | .00025 |
| 13C7-PFUnA | .00025 |
| 13C8-FOSA | .00025 |
| 13C8-PFOA | .00025 |
| 13C8-PFOS | .00024 |
| 13C9-PFNA | .00025 |
| d3-MeFOSAA | .00025 |
| d5-EtFOSAA | .00025 |
| N-ethylperfluoro-octanesulfonamidoacetic acid | .00100 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | .00100 |
| Perfluoro-1-butanesulfonate | .00101 |
| Perfluoro-1-hexanesulfonate | .00101 |
| Perfluoro-1-octanesulfonamide | .00100 |
| Perfluoro-1-octanesulfonate | .00100 |
| Perfluoro-n-butanoic Acid | .00100 |
| Perfluoro-n-decanoic Acid | .00100 |
| Perfluoro-n-dodecanoic acid | .00100 |
| Perfluoro-n-heptanoic Acid | .00100 |
| Perfluoro-n-hexanoic acid | .00101 |
| Perfluoro-n-octanoic Acid | .00100 |
| Perfluorononanoic Acid | .00100 |
| Perfluoro-n-pentanoic acid | .00100 |
| Perfluoro-n-tetradecanoic acid | .00100 |
| Perfluoro-n-tridecanoic acid | .00100 |
| Perfluoro-n-undecanoic acid | .00100 |
| Sodium perfluoro-1-pentanesulfonate | .00100 |

**Syringes/Pipettes:**

| Stock ID: | Type: | Battelle ID: |
|---|---|---|
| JY25 | Pipette | I0793912B |
| JY27 | Pipette | I0793912B |
| JZ27 | Pipette | B814657482 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Prep Form II

Approved: ☑

**Standard Laboratory ID Number:** **JY46**

**Description:** PFAS - DoD Instrument Blank

| Assigned Lab ID (from receipt log) | Chemical Name: | Source | Stock (ug/mL) | Expir. Date | Purity (%) | Density (g/mL) | Amount Taken | Conv. Fact. | Final Vol. (mL) | Std. Conc. (ug/mL) |
|---|---|---|---|---|---|---|---|---|---|---|
| JY25 | PFAS - DoD Internal Standard Stock Solution | Solution | ~0 | 07/16/19 | --- | --- | 50 uL | 1 | 10 | ~0.0000 |
| JY27 | PFAS - DoD High Level Labelled Extracted Internal Standards (SIS) | Solution | ~0 | 07/16/19 | --- | --- | 50 uL | 1 | 10 | ~0.0000 |

| | | | |
|---|---|---|---|
| **Solution Prepared By:** Schultz, Stephanie | **Date Prepared:** 7/16/2018 | **Expiration Date:** | 7/16/2019 |
| **Solution Volume** 40 **mL X** 1 **Vials** | **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107 | | |

**Balance ID:**

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JY46

**Description:** PFAS - DoD Instrument Blank

**Stock Id:** JY25

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| 13C2-PFDA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C2-PFOA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C3-PFBA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C4-PFOS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |

**Stock Id:** JY27

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| 13C2-4:2FTS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00023 |
| 13C2-6:2FTS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C2-8:2FTS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C2-PFDoA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C2-PFTeDA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C3-PFBS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00023 |
| 13C3-PFHxS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C4-PFBA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C4-PFHpA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C5-PFHxA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C5-PFPeA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C6-PFDA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C7-PFUnA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C8-FOSA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C8-PFOA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| 13C8-PFOS | 50 | 0.05 | --- | --- | 1 | 10 | 0.00024 |
| 13C9-PFNA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| d3-MeFOSAA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |
| d5-EtFOSAA | 50 | 0.05 | --- | --- | 1 | 10 | 0.00025 |

**Final Concentrations:**

| Analyte: | Conc (ug/mL): |
|---|---|
| 13C2-4:2FTS | .00023 |
| 13C2-6:2FTS | .00024 |
| 13C2-8:2FTS | .00024 |
| 13C2-PFDA | .00025 |
| 13C2-PFDoA | .00025 |
| 13C2-PFOA | .00025 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** **JY46**

**Description:** PFAS - DoD Instrument Blank

| | |
|---|---|
| 13C2-PFTeDA | .00025 |
| 13C3-PFBA | .00025 |
| 13C3-PFBS | .00023 |
| 13C3-PFHxS | .00024 |
| 13C4-PFBA | .00025 |
| 13C4-PFHpA | .00025 |
| 13C4-PFOS | .00024 |
| 13C5-PFHxA | .00025 |
| 13C5-PFPeA | .00025 |
| 13C6-PFDA | .00025 |
| 13C7-PFUnA | .00025 |
| 13C8-FOSA | .00025 |
| 13C8-PFOA | .00025 |
| 13C8-PFOS | .00024 |
| 13C9-PFNA | .00025 |
| d3-MeFOSAA | .00025 |
| d5-EtFOSAA | .00025 |

**Syringes/Pipettes:**

| Stock ID: | Type: | Battelle ID: |
|---|---|---|
| JY25 | Pipette | I0793912B |
| JY27 | Pipette | I0793912B |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/16/2018 **Expiration Date:** 7/16/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Schumitz, Denise **Date:** 8/14/2018 4:48:00 PM

BATTELLE
It can be done

# Standard Solution Prep Form II

Approved: ☑

**Standard Laboratory ID Number:** **JZ27**

**Description:** PFAS - DoD Second Source LCS/MS Solution

| Assigned Lab ID (from receipt log) | Chemical Name: | Source | Stock (ug/mL) | Expir. Date | Purity (%) | Density (g/mL) | Amount Taken | Conv. Fact. | Final Vol. (mL) | Std. Conc. (ug/mL) |
|---|---|---|---|---|---|---|---|---|---|---|
| 171025-01 | PFOA - 2nd Source | Neat | ~1.000000 | 03/22/22 | --- | --- | 1000 uL | 1 | 20 | ~0.0500 |

| | | | |
|---|---|---|---|
| **Solution Prepared By:** Schultz, Stephanie | **Date Prepared:** 7/25/2018 | **Expiration Date:** | 7/25/2019 |
| **Solution Volume** 40 **mL X** 1 **Vials** | **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107 | | |

**Balance ID:**

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Thorn, Jonathan **Date:** 7/26/2018 8:18:00 AM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number:** JZ27

**Description:** PFAS - DoD Second Source LCS/MS Solution

**Stock Id:** 171025-01

| Chemical Name | Stock Amount uL | Initial Conc. (ug/mL) | Density (g/mL) | Purity | Conv. Factor | Final Vol mL | Concentration (ug/mL) |
|---|---|---|---|---|---|---|---|
| (Na) 1H,1H,2H,2H-Perfluorodecane sulfonate | 1000 | 1.01 | 1 | 100.000 | 1 | 20 | 0.05050 |
| (Na) 1H,1H,2H,2H-Perfluorohexane sulfonate | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| (Na) 1H,1H,2H,2H-Perfluorooctane sulfonate | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| (Na) Perfluoro-1-decanesulfonate | 1000 | 1.01 | 1 | 100.000 | 1 | 20 | 0.05050 |
| (NA) Perfluoro-1-heptanesulfonate | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| (Na) Perfluoro-1-nonanesulfonate | 1000 | 1.01 | 1 | 100.000 | 1 | 20 | 0.05050 |
| N-ethylperfluoro-octanesulfonamidoacetic acid | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| Perfluoro-1-butanesulfonate | 1000 | 1.01 | 1 | 100.000 | 1 | 20 | 0.05050 |
| Perfluoro-1-hexanesulfonate | 1000 | 1.01 | 1 | 100.000 | 1 | 20 | 0.05050 |
| Perfluoro-1-octanesulfonamide | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| Perfluoro-1-octanesulfonate | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| Perfluoro-n-butanoic Acid | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| Perfluoro-n-decanoic Acid | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| Perfluoro-n-dodecanoic acid | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| Perfluoro-n-heptanoic Acid | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| Perfluoro-n-hexanoic acid | 1000 | 1.01 | 1 | 100.000 | 1 | 20 | 0.05050 |
| Perfluoro-n-octanoic Acid | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| Perfluorononanoic Acid | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| Perfluoro-n-pentanoic acid | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| Perfluoro-n-tetradecanoic acid | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| Perfluoro-n-tridecanoic acid | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| Perfluoro-n-undecanoic acid | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |
| Sodium perfluoro-1-pentanesulfonate | 1000 | 1.00 | 1 | 100.000 | 1 | 20 | 0.05000 |

**Final Concentrations:**

| Analyte: | Conc (ug/mL): |
|---|---|
| (Na) 1H,1H,2H,2H-Perfluorodecane sulfonate | .05050 |
| (Na) 1H,1H,2H,2H-Perfluorohexane sulfonate | .05000 |
| (Na) 1H,1H,2H,2H-Perfluorooctane sulfonate | .05000 |
| (Na) Perfluoro-1-decanesulfonate | .05050 |
| (NA) Perfluoro-1-heptanesulfonate | .05000 |
| (Na) Perfluoro-1-nonanesulfonate | .05050 |
| N-ethylperfluoro-octanesulfonamidoacetic acid | .05000 |
| N-methylperfluoro-1-octanesulfonamidoacetic acid | .05000 |
| Perfluoro-1-butanesulfonate | .05050 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/25/2018 **Expiration Date:** 7/25/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Thorn, Jonathan **Date:** 7/26/2018 8:18:00 AM

BATTELLE
It can be done

# Standard Solution Concentrations

Approved: ☑

**Standard Laboratory ID Number: JZ27**

**Description:** PFAS - DoD Second Source LCS/MS Solution

| | |
|---|---|
| Perfluoro-1-hexanesulfonate | .05050 |
| Perfluoro-1-octanesulfonamide | .05000 |
| Perfluoro-1-octanesulfonate | .05000 |
| Perfluoro-n-butanoic Acid | .05000 |
| Perfluoro-n-decanoic Acid | .05000 |
| Perfluoro-n-dodecanoic acid | .05000 |
| Perfluoro-n-heptanoic Acid | .05000 |
| Perfluoro-n-hexanoic acid | .05050 |
| Perfluoro-n-octanoic Acid | .05000 |
| Perfluorononanoic Acid | .05000 |
| Perfluoro-n-pentanoic acid | .05000 |
| Perfluoro-n-tetradecanoic acid | .05000 |
| Perfluoro-n-tridecanoic acid | .05000 |
| Perfluoro-n-undecanoic acid | .05000 |
| Sodium perfluoro-1-pentanesulfonate | .05000 |

**Syringes/Pipettes:**

| Stock ID: | Type: | Battelle ID: |
|---|---|---|
| 171025-01 | Pipette | B820865811 |

**Solution Prepared By:** Schultz, Stephanie **Date Prepared:** 7/25/2018 **Expiration Date:** 7/25/2019

**Solution Volume** 40 **mL X** 1 **Vials** **Refrigerator/Freezer No:** LC Laboratory: Refrigerator - R0107

**Comment:** 80/20 Methanol/Milli-q water

**Approved By:** Thorn, Jonathan **Date:** 7/26/2018 8:18:00 AM

BATTELLE

It can be done

**BDO Id:** 171025-01

# Reagent Receipt Report

Approved: ☐ ☐

**Name:** PFOA - 2nd Source
**Vendor:** ABSOLUTE STANDARDS
**Catalogue No:** 99207
**Type:** Solution
**Lot No:** 032217
**Quantity:** 5 ea ml **% Moisture:**
**Description:** PFOA-DOD

**Received:** 10/25/2017
**Custodian:** Schumitz, Matt
**Expires:** 3/22/2022
**Consumed:**
**Stored In:** LC Laboratory - F0111

| Analyte: | CAS No: | Concentration (ug/mL): | Purity: | Density: | Density Units: | Cert | Cert Val: | Lower Limit: | Upper Limit: |
|---|---|---|---|---|---|---|---|---|---|
| (Na) 1H,1H,2H,2H-Perfluorodecane | 39108-34-4 | 1.0100 | 100.00 | -- | -- | ☐ | | | |
| (Na) 1H,1H,2H,2H-Perfluorohexane | BDO-2205 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| (Na) 1H,1H,2H,2H-Perfluorooctane s | 27619-97-2 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| (Na) Perfluoro-1-decanesulfonate | 2806-15-7 | 1.0100 | 100.00 | -- | -- | ☐ | | | |
| (NA) Perfluoro-1-heptanesulfonate | 375-92-8 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| (Na) Perfluoro-1-nonanesulfonate | 98789-57-2 | 1.0100 | 100.00 | -- | -- | ☐ | | | |
| N-ethylperfluoro-octanesulfonamidoa | 2991-50-6 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| N-methylperfluoro-1-octanesulfonami | 2355-31-9 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| Perfluoro-1-butanesulfonic Acid | 375-73-5 | 1.0100 | 100.00 | -- | -- | ☐ | | | |
| Perfluoro-1-hexanesulfonic Acid | 355-46-4 | 1.0100 | 100.00 | -- | -- | ☐ | | | |
| Perfluoro-1-octanesulfonamide | 754-91-6 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| Perfluoro-1-octanesulphonic Acid | 1763-23-1 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| Perfluoro-n-butanoic Acid | 375-22-4 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| Perfluoro-n-decanoic Acid | 335-76-2 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| Perfluoro-n-dodecanoic acid | 307-55-1 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| Perfluoro-n-heptanoic Acid | 375-85-9 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| Perfluoro-n-hexanoic acid | 307-24-4 | 1.0100 | 100.00 | -- | -- | ☐ | | | |
| Perfluoro-n-octanoic Acid | 335-67-1 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| Perfluorononanoic Acid | 375-95-1 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| Perfluoro-n-pentanoic acid | 2706-90-3 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| Perfluoro-n-tetradecanoic acid | 376-06-7 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| Perfluoro-n-tridecanoic acid | 72629-94-8 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| Perfluoro-n-undecanoic acid | 2058-94-8 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| Sodium perfluoro-1-pentanesulfonat | BDO-2114 | 1.0000 | 100.00 | -- | -- | ☐ | | | |

**Total Analytes:** 24

**Notes:**

**Approved by:** _____ **Approved on:** _____

**Authorized by:** _____ **Authorized on:** _____

**Absolute Standards, Inc.**
800-368-1131
www.absolutestandards.com

***Analytical Reference Material ARM***

ISO 9001 QS Registered
ISO 17025-34-35-43 Accredited
Scopes: http://AbsoluteStandards.com

CERTIFIED WEIGHT REPORT

1710250d

**Part Number:** 99207
**Lot Number:** 101717
**Description:** PFOA - DOD
24 components
**Expiration Date:** 101722
**Recommended Storage:** Freezer (0 °C)
**Nominal Concentration (µg/mL):** 1.0
**NIST Test ID#:** 2506734D

| Solvent(s): | Lot# | |
|---|---|---|
| Methanol (1 mM KOH) | 031317 | (98%) |
| 2-Propanol | 23214 | (2%) |

5E-05 Balance Uncertainty
0.007 Flask Uncertainty

Formulated By: Mario Luis 101717 DATE

Reviewed By: Pedro L. Rentas 101717 DATE

Volume(s) shown below were combined and diluted to (mL): 50.0

**Note: All assigned values are anion concentrations.**

| Compound | Part Number | Lot Number | Dilution Factor | Initial Vol. (mL) | Uncertainty Pipette (mL) | Initial Conc.(µg/mL) | Final Conc.(µg/mL) | Expanded Uncertainty (+/-) (µg/mL) | SDS Information (Solvent Safety Info. On Attached pg.) CAS# | OSHA PEL (TWA) | LD50 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Perfluoro-n-butanoic acid | 3670 | PFBA0516 | 0.02 | 1.00 | 0.004 | 50.0 | 1.00 | 0.01 | 375-22-4 | N/A | N/A |
| 2. Perfluoro-n-pentanoic acid | 3669 | PFPeA0617 | 0.02 | 1.00 | 0.004 | 50.0 | 1.00 | 0.01 | 2706-90-3 | N/A | N/A |
| 3. Perfluorohexanoic acid | 99199 | 030617 | 0.02 | 1.00 | 0.004 | 50.3 | 1.01 | 0.01 | 307-24-4 | N/A | N/A |
| 4. Perfluoroheptanoic acid | 99197 | 030517 | 0.02 | 1.00 | 0.004 | 50.1 | 1.00 | 0.01 | 375-85-9 | N/A | N/A |
| 5. Perfluorooctanoic acid | 99202 | 030617 | 0.02 | 1.00 | 0.004 | 50.2 | 1.00 | 0.01 | 335-67-1 | N/A | ipr-rat 189mg/kg |
| 6. Perfluorononanoic acid | 99200 | 030617 | 0.02 | 1.00 | 0.004 | 50.1 | 1.00 | 0.01 | 375-95-1 | N/A | N/A |
| 7. Perfluorodecanoic acid | 99195 | 030617 | 0.02 | 1.00 | 0.004 | 50.1 | 1.00 | 0.01 | 335-76-2 | N/A | orl-rat 57mg/kg |
| 8. Perfluoroundecanoic acid | 99205 | 030617 | 0.02 | 1.00 | 0.004 | 50.1 | 1.00 | 0.01 | 2058-94-8 | N/A | N/A |
| 9. Tricosafluorododecanoic acid | 99196 | 030617 | 0.02 | 1.00 | 0.004 | 50.1 | 1.00 | 0.01 | 307-55-1 | N/A | N/A |
| 10. Perfluorotridecanoic acid | 99204 | 030617 | 0.02 | 1.00 | 0.004 | 50.1 | 1.00 | 0.01 | 72629-94-8 | N/A | N/A |
| 11. Perfluorotetradecanoic acid | 99203 | 030617 | 0.02 | 1.00 | 0.004 | 50.1 | 1.00 | 0.01 | 376-06-7 | N/A | N/A |
| 12. Perfluoro-1-octanesulfonamide | 3677 | FOSA0916I | 0.02 | 1.00 | 0.004 | 50.0 | 1.00 | 0.01 | 754-91-6 | N/A | N/A |
| 13. N-Methylperfluoro-1-octanesulfonamidoacetic acid | 3667 | NMeFOSAA0117 | 0.02 | 1.00 | 0.004 | 50.0 | 1.00 | 0.01 | 2355-31-9 | N/A | N/A |
| 14. N-Ethylperfluoro-1-octanesulfonamidoacetic acid | 3664 | NEtFOSAA0117 | 0.02 | 1.00 | 0.004 | 50.0 | 1.00 | 0.01 | 2991-50-6 | N/A | N/A |
| 15. Perfluorobutanesulfonic acid | 99194 | 031017 | 0.02 | 1.00 | 0.004 | 50.7 | 1.01 | 0.01 | 375-73-5 | N/A | N/A |
| 16. Perfluoro-1-pentanesulfonic acid | 3956 | LPFPeS0117 | 0.0214 | 1.07 | 0.004 | 46.9 | 1.00 | 0.01 | 630402-22-1 | N/A | N/A |
| 17. Perfluorohexanesulfonic acid (branched) | 99198 | 030617 | 0.02 | 1.00 | 0.004 | 50.6 | 1.01 | 0.01 | 3871-99-6 | N/A | N/A |
| 18. Perfluoro-1-heptanesulfonic acid | 3672 | LPFHpS0817 | 0.021 | 1.05 | 0.004 | 47.6 | 1.00 | 0.01 | 375-92-8 | N/A | N/A |
| 19. Heptadecafluorooctanesulfonic acid (branched) | 99201 | 030617 | 0.02 | 1.00 | 0.004 | 50.2 | 1.00 | 0.01 | 1763-23-1 | N/A | N/A |
| 20. Perfluoro-1-nonanesulfonic acid | 3957 | LPFNS0516 | 0.021 | 1.05 | 0.004 | 48.0 | 1.01 | 0.01 | 98789-57-2 | N/A | N/A |
| 21. Perfluoro-1-decanesulfonic acid | 3671 | LPFDS0217 | 0.021 | 1.05 | 0.004 | 48.2 | 1.01 | 0.01 | 2806-15-7 | N/A | N/A |
| 22. 1H,1H,2H,2H-Perfluorohexane sulfonic acid | 3955 | 42FTS1216 | 0.0214 | 1.07 | 0.004 | 46.7 | 1.00 | 0.01 | 00-00-0 | N/A | N/A |
| 23. 1H,1H,2H,2H-Perfluorooctane sulfonic acid | 3661 | 62FTS0616 | 0.021 | 1.05 | 0.004 | 47.4 | 1.00 | 0.01 | 27619-97-2 | N/A | N/A |
| 24. 1H,1H,2H,2H-Perfluorodecane sulfonic acid | 3662 | 82FTS1216 | 0.021 | 1.05 | 0.004 | 47.9 | 1.01 | 0.01 | 39108-34-4 | N/A | N/A |

- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certifed (+/-) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

BATTELLE

It can be done

BDO Id: 180618-02

# Reagent Receipt Report

Approved: ☐ Authorized ☐

| | | | |
|---|---|---|---|
| Name: | Branched NEtFOSAA Standard (50 µ | Received: | 6/18/2018 |
| Vendor: | Wellington Laboratories | Custodian: | Thorn, Jonathan |
| Catalogue No: | br-NEtFOSAAA | Expires: | 1/17/2023 |
| Type: | Solution | Consumed: | |
| Lot No: | brNEtFOSAA0118 | Stored In: | Sample Preparation - C0103 |
| Quantity: | 1 ea mL % Moisture: 0 | | |
| Description: | Branched NEtFOSAA Standard (50 µg/mL) | | |

| Analyte: | CAS No: | Concentration (ug/mL): | Purity: | Density: | Density Units: | Cert | Cert Val: | Lower Limit: | Upper Limit: |
|---|---|---|---|---|---|---|---|---|---|

Notes:

Approved by: _____ Approved on: _____

Authorized by: _____ Authorized on: _____

180618-02

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

# br-NEtFOSAA

**N-Ethylperfluorooctanesulfonamidoacetic Acid Solution/Mixture of Linear and Branched Isomers**

| | |
|---|---|
| **PRODUCT CODE:** | br-NEtFOSAA |
| **LOT NUMBER:** | brNEtFOSAA0118 |
| **CONCENTRATION:** | 50.0 ± 2.5 µg/ml |
| **SOLVENT(S):** | Methanol/Water (<1%) |
| **DATE PREPARED:** (mm/dd/yyyy) | 01/10/2018 |
| **LAST TESTED:** (mm/dd/yyyy) | 01/17/2018 |
| **EXPIRY DATE:** (mm/dd/yyyy) | 01/17/2023 |
| **RECOMMENDED STORAGE:** | Refrigerate ampoule |

## DESCRIPTION:

The chemical purity has been determined to be ≥98% N-ethylperfluorooctanesulfonamidoacetic acid (linear and branched isomers). The full name, structure and percent composition for each of the identified isomeric components are given in Table A.

## DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by $^{19}$F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

## ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the acetic acid moiety to its respective methyl ester.

***FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE***

*Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA*
*519-822-2436 • Fax: 519-822-2849 • info@well-labs.com*

## INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

## HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

## SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

## HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

## UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value $y$ and the uncertainty of the independent parameters $x_1$, $x_2$,...$x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

## TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

## EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

## LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

## QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED 17034 REFERENCE MATERIAL PRODUCER

**For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com**

**Table A:** **br-NEtFOSAA; Isomeric Components and Percent Composition (by $^{19}$F-NMR)***

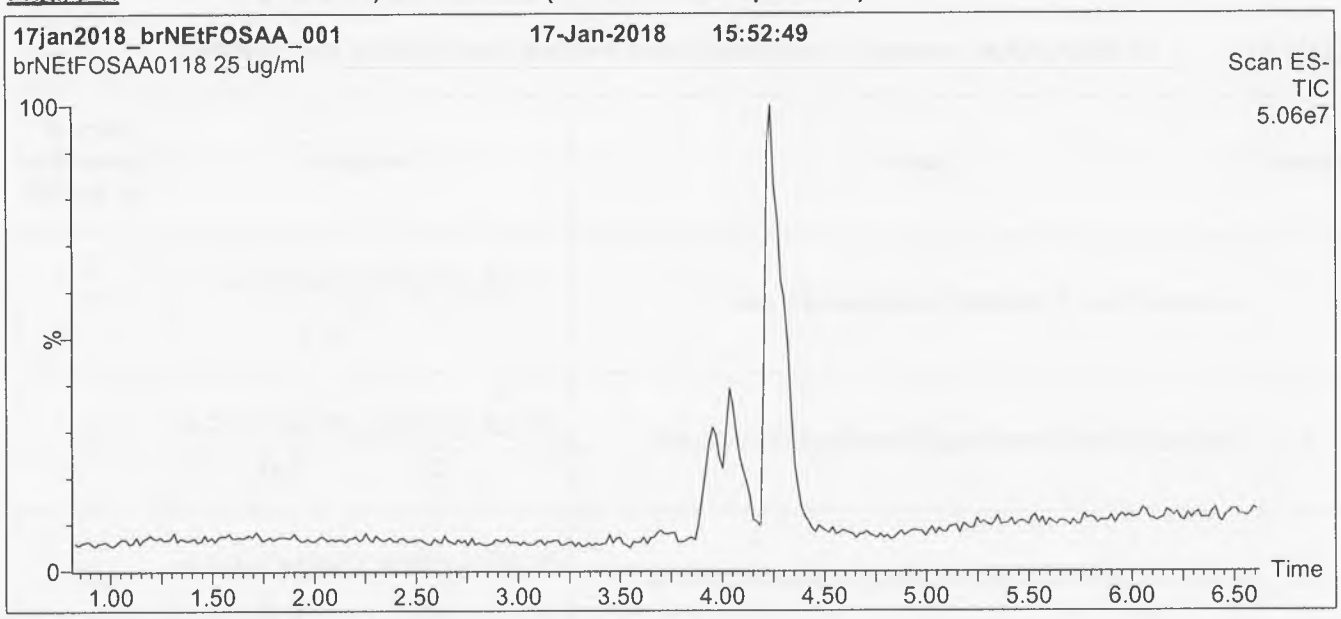
| Isomer | Name | Structure | Percent Composition by $^{19}$F-NMR |
|---|---|---|---|
| 1 | N-ethylperfluoro-1-octanesulfonamidoacetic acid | $CF_3(CF_2)_7SO_2N(C_2H_5)CH_2CO_2H$ | 77.5 |
| 2 | N-ethylperfluoro-3-methylheptanesulfonamidoacetic acid | $CF_3(CF_2)_3CF(CF_3)(CF_2)_2SO_2N(C_2H_5)CH_2CO_2H$ | 2.3 |
| 3 | N-ethylperfluoro-4-methylheptanesulfonamidoacetic acid | $CF_3(CF_2)_2CF(CF_3)(CF_2)_3SO_2N(C_2H_5)CH_2CO_2H$ | 2.2 |
| 4 | N-ethylperfluoro-5-methylheptanesulfonamidoacetic acid | $CF_3CF_2CF(CF_3)(CF_2)_4SO_2N(C_2H_5)CH_2CO_2H$ | 5.4 |
| 5 | N-ethylperfluoro-6-methylheptanesulfonamidoacetic acid | $CF_3CF(CF_3)(CF_2)_5SO_2N(C_2H_5)CH_2CO_2H$ | 10.4 |
| 6 | N-ethylperfluoro-5,5-dimethylhexanesulfonamidoacetic acid | $CF_3C(CF_3)_2(CF_2)_4SO_2N(C_2H_5)CH_2CO_2H$ | 0.3 |
| 7 | N-ethylperfluoro-4,5-dimethylhexanesulfonamidoacetic acid | $CF_3CF(CF_3)CF(CF_2)_3SO_2N(C_2H_5)CH_2CO_2H$ | 0.3 |
| 8 | N-ethylperfluoro-3,5-dimethylhexanesulfonamidoacetic acid | $CF_3CF(CF_3)CF_2CF(CF_2)_2SO_2N(C_2H_5)CH_2CO_2H$ | 0.3 |
| 9 | Other Unidentified Isomers | | 1.3 |

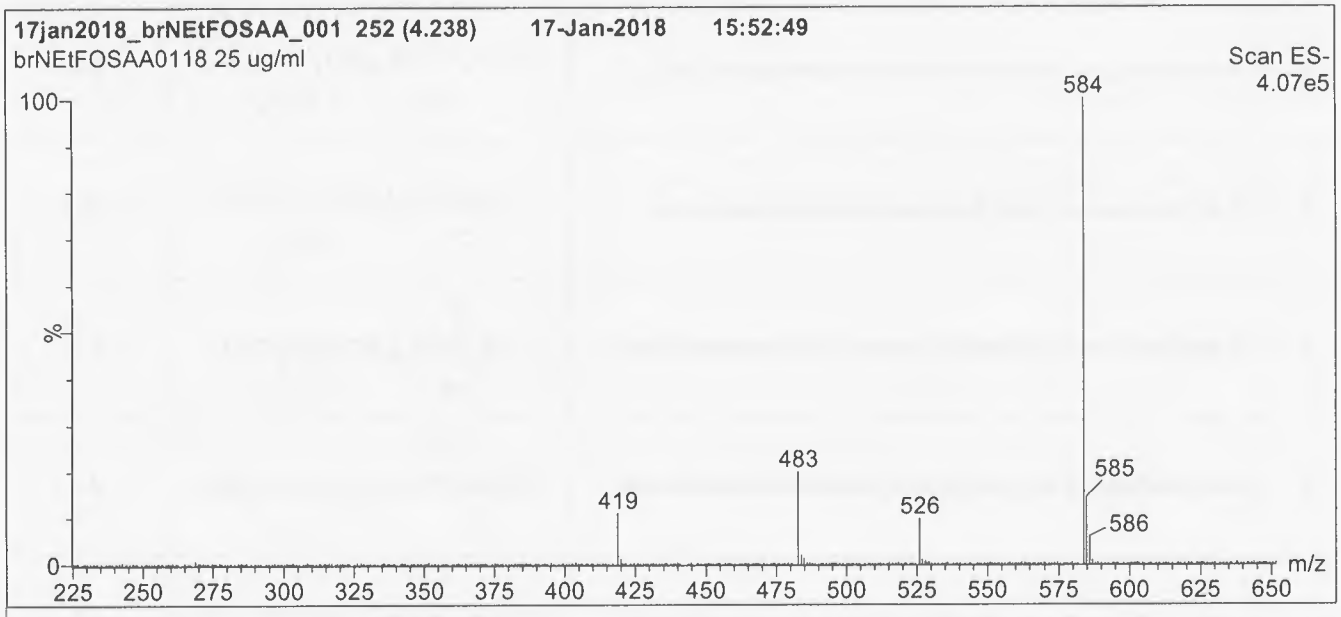
* Percent of total N-ethylperfluorooctanesulfonamidoacetic acid isomers only.

**Certified By:** _____ **Date:** 03/22/2018 (mm/dd/yyyy)

B.G. Chittim, General Manager

**Figure 1:** **br-NEtFOSAA; LC/MS Data (TIC and Mass Spectrum)**




**Conditions for Figure 1:**

**LC:** **Waters Acquity Ultra Performance LC**
**MS:** **Micromass Quattro *micro* API MS**

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield $RP_{18}$
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% $H_2O$
(both with 10 mM $NH_4OAc$ buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.

Time: 10 min

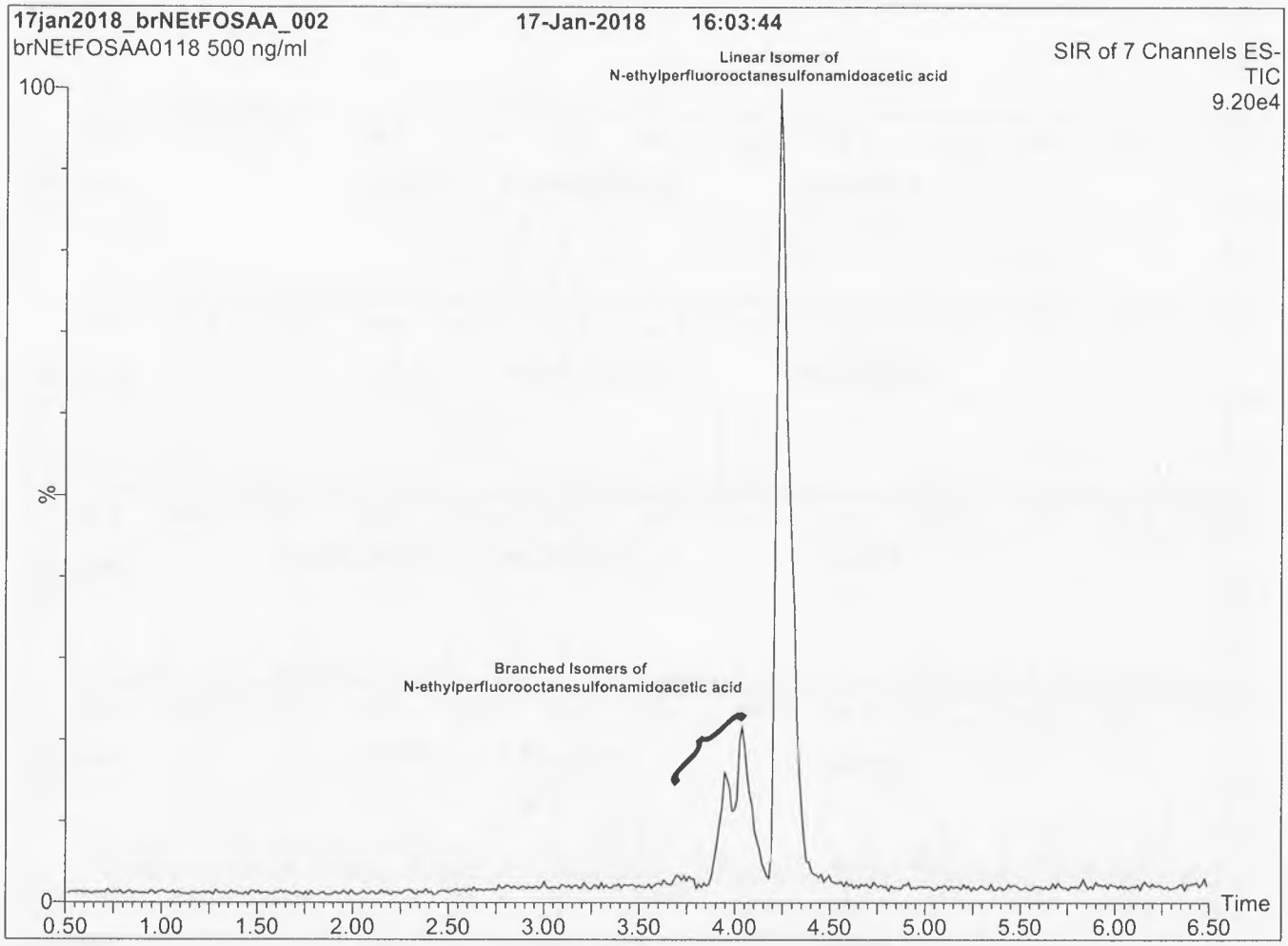
Flow: 300 µl/min

**MS Parameters**

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

**Figure 2:** **br-NEtFOSAA; LC/MS Data (SIR)**




**Conditions for Figure 2:**

**LC:** **Waters Acquity Ultra Performance LC**
**MS:** **Micromass Quattro *micro* API MS**

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield $RP_{18}$
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% $H_2O$
(both with 10 mM $NH_4OAc$ buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.

Time: 10 min

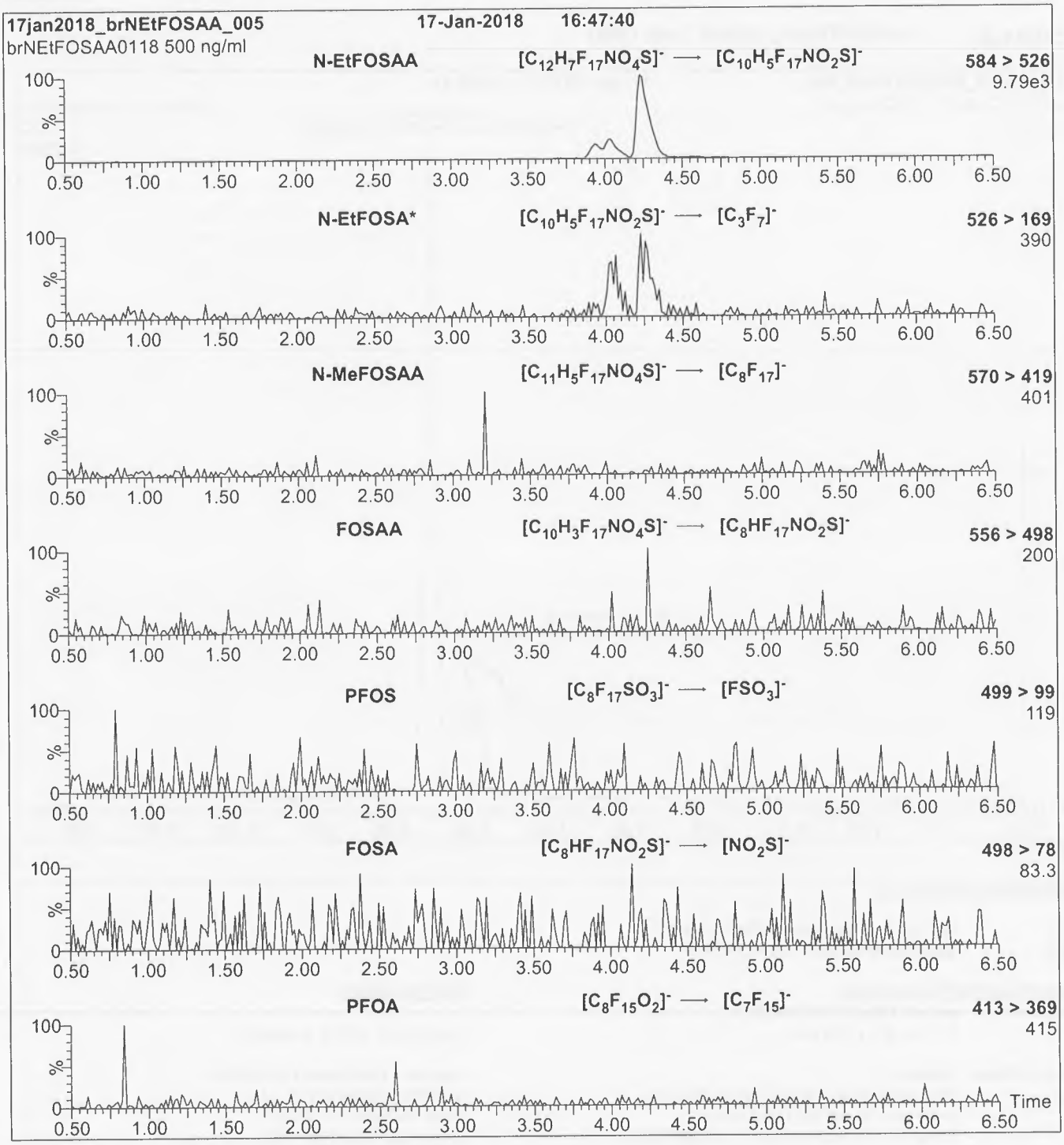
Flow: 300 µl/min

**MS Parameters**

Experiment: SIR (7 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15-60
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

**Figure 3:** **br-NEtFOSAA; LC/MS/MS Data (Selected MRM Transitions)**




***Note**: N-EtFOSA is formed by in-source fragmentation.

**Conditions for Figure 3:**

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 µl/min

**MS Parameters**

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 11-40 (variable)

BATTELLE

It can be done

BDO Id: 180618-03

# Reagent Receipt Report

Approved: ☐ Authorized ☐

| | | | |
|---|---|---|---|
| Name: | Branched NMeFOSAA Standard (50 | Received: | 6/18/2018 |
| Vendor: | Wellington Laboratories | Custodian: | Thorn, Jonathan |
| Catalogue No: | brNMeFOSAA | Expires: | 1/17/2023 |
| Type: | Solution | Consumed: | |
| Lot No: | brNMeFOSAA0118 | Stored In: | Sample Preparation - C0103 |
| Quantity: | 1 ea mL % Moisture: 0 | | |
| Description: | Branched NMeFOSAA Standard (50 µg/mL) | | |

| Analyte: | CAS No: | Concentration (ug/mL): | Purity: | Density: | Density Units: | Cert | Cert Val: | Lower Limit: | Upper Limit: |
|---|---|---|---|---|---|---|---|---|---|

Notes:

Approved by: _____ Approved on: _____

Authorized by: _____ Authorized on: _____

180618-03

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

# br-NMeFOSAA

**N-Methylperfluorooctanesulfonamidoacetic Acid Solution/Mixture of Linear and Branched Isomers**

| | |
|---|---|
| **PRODUCT CODE:** | br-NMeFOSAA |
| **LOT NUMBER:** | brNMeFOSAA0118 |
| **CONCENTRATION:** | 50.0 ± 2.5 µg/ml |
| **SOLVENT(S):** | Methanol/Water (<1%) |
| **DATE PREPARED:** (mm/dd/yyyy) | 01/10/2018 |
| **LAST TESTED:** (mm/dd/yyyy) | 01/17/2018 |
| **EXPIRY DATE:** (mm/dd/yyyy) | 01/17/2023 |
| **RECOMMENDED STORAGE:** | Refrigerate ampoule |

## DESCRIPTION:

The chemical purity has been determined to be ≥98% N-methylperfluorooctanesulfonamidoacetic acid (linear and branched isomers). The full name, structure and percent composition for each of the identified isomeric components are given in Table A.

## DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by $^{19}$F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

## ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the acetic acid moiety to its respective methyl ester.

***FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE***

*Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA*
*519-822-2436 • Fax: 519-822-2849 • info@well-labs.com*

## INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

## HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

## SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

## HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

## UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value $y$ and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

## TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

## EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

## LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

## QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO17034 REFERENCE MATERIAL PRODUCER

**For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com**

**Table A:** **br-NMeFOSAA; Isomeric Components and Percent Composition (by $^{19}$F-NMR)***

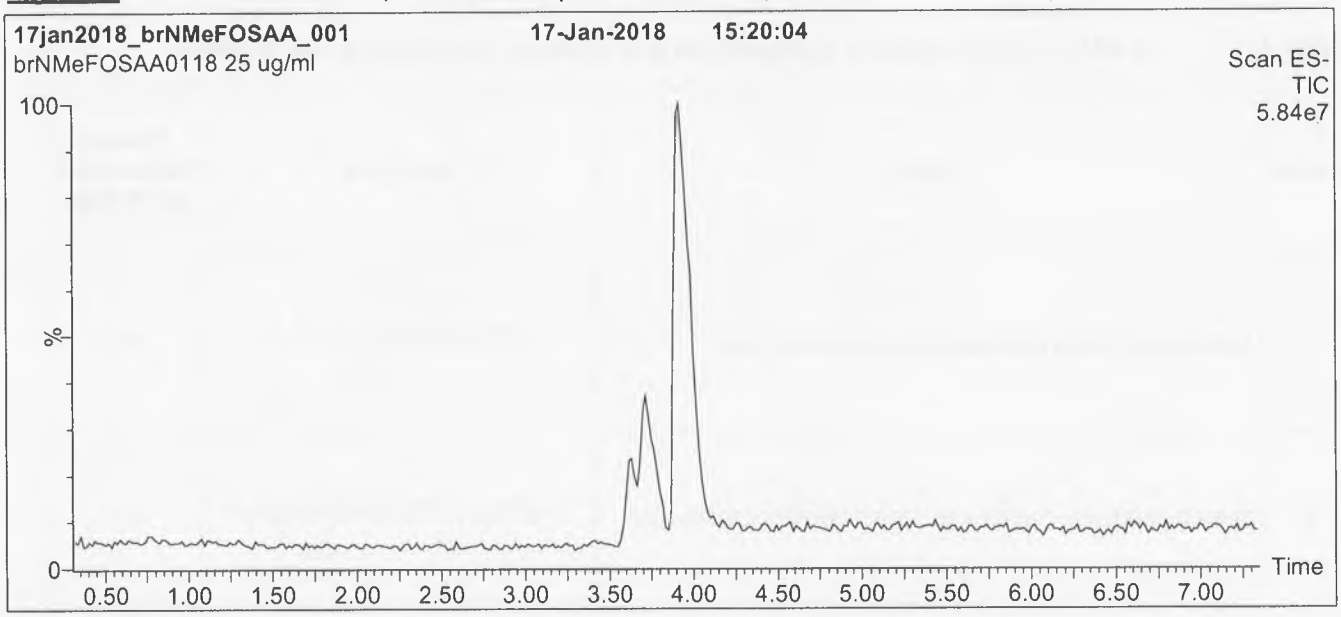
| Isomer | Name | Structure | Percent Composition by $^{19}$F-NMR |
|---|---|---|---|
| 1 | N-methylperfluoro-1-octanesulfonamidoacetic acid | $CF_3(CF_2)_7SO_2N(CH_3)CH_2CO_2H$ | 76.0 |
| 2 | N-methylperfluoro-3-methylheptanesulfonamidoacetic acid | $CF_3(CF_2)_3CF(CF_3)(CF_2)_2SO_2N(CH_3)CH_2CO_2H$ | 0.7 |
| 3 | N-methylperfluoro-4-methylheptanesulfonamidoacetic acid | $CF_3(CF_2)_2CF(CF_3)(CF_2)_3SO_2N(CH_3)CH_2CO_2H$ | 2.0 |
| 4 | N-methylperfluoro-5-methylheptanesulfonamidoacetic acid | $CF_3CF_2CF(CF_3)(CF_2)_4SO_2N(CH_3)CH_2CO_2H$ | 6.0 |
| 5 | N-methylperfluoro-6-methylheptanesulfonamidoacetic acid | $CF_3CF(CF_3)(CF_2)_5SO_2N(CH_3)CH_2CO_2H$ | 14.0 |
| 6 | N-methylperfluoro-5,5-dimethylhexanesulfonamidoacetic acid | $CF_3C(CF_3)_2(CF_2)_4SO_2N(CH_3)CH_2CO_2H$ | 0.2 |
| 7 | Other Unidentified Isomers | | 1.1 |

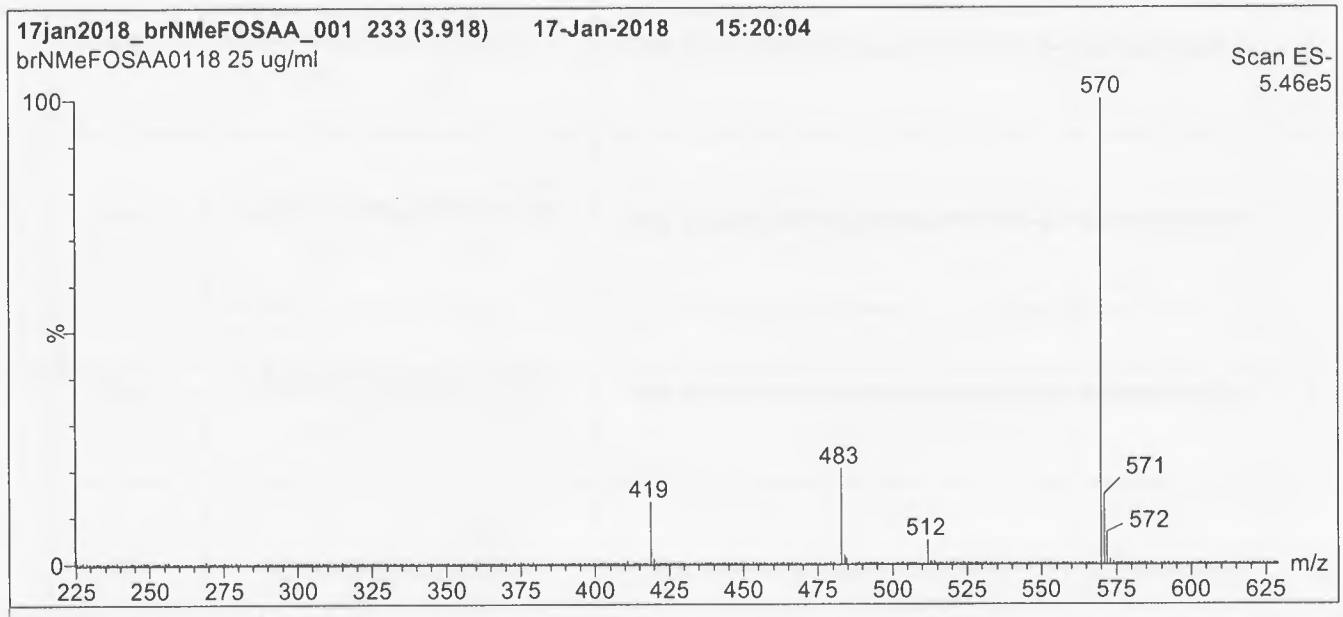
* Percent of total N-methylperfluorooctanesulfonamidoacetic acid isomers only.

**Certified By:** _____ **Date:** 03/22/2018 (mm/dd/yyyy)

B.G. Chittim, General Manager

**Figure 1:** **br-NMeFOSAA; LC/MS Data (TIC and Mass Spectrum)**




**Conditions for Figure 1:**

**LC:** **Waters Acquity Ultra Performance LC**
**MS:** **Micromass Quattro *micro* API MS**

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield $RP_{18}$
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% $H_2O$
(both with 10 mM $NH_4OAc$ buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.

Time: 10 min

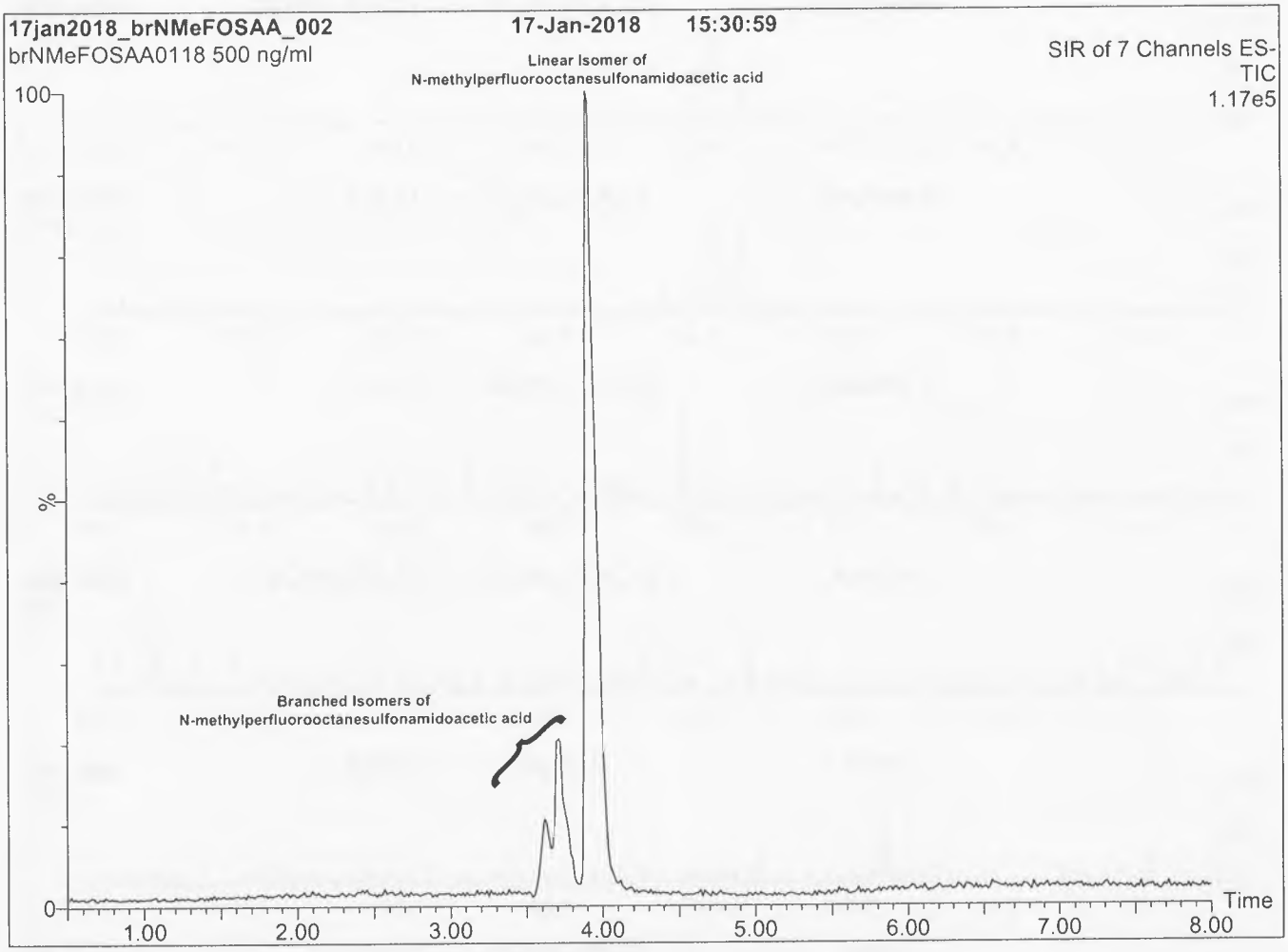
Flow: 300 µl/min

**MS Parameters**

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

**Figure 2:** **br-NMeFOSAA; LC/MS Data (SIR)**




**Conditions for Figure 2:**

**LC:** **Waters Acquity Ultra Performance LC**
**MS:** **Micromass Quattro *micro* API MS**

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield $RP_{18}$
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% $H_2O$
(both with 10 mM $NH_4OAc$ buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.

Time: 10 min

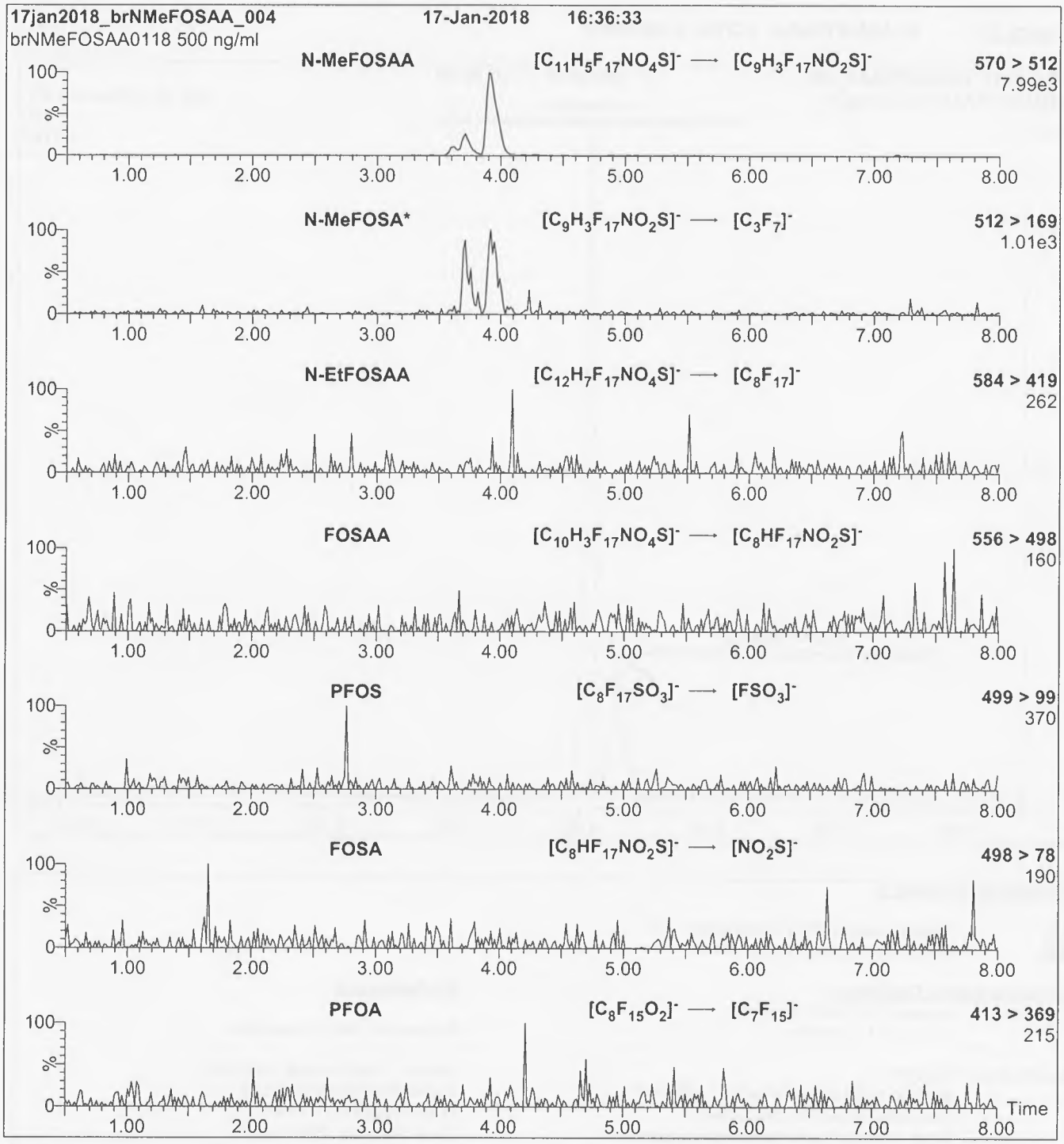
Flow: 300 µl/min

**MS Parameters**

Experiment: SIR (7 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15-60
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

**Figure 3:** br-NMeFOSAA; LC/MS/MS Data (Selected MRM Transitions)




*Note: N-MeFOSA is formed by in-source fragmentation.

**Conditions for Figure 3:**

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 µl/min

**MS Parameters**

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 11-40 (variable)

BATTELLE

It can be done

BDO Id: 180618-04

# Reagent Receipt Report

Approved: ☐ Authorized ☐

| | | | |
|---|---|---|---|
| Name: | PFOA - Technical Mix | Received: | 6/18/2018 |
| Vendor: | Wellington Laboratories | Custodian: | Thorn, Jonathan |
| Catalogue No: | T-PFOA | Expires: | 2/16/2022 |
| Type: | Solution | Consumed: | |
| Lot No: | TPFOA0217 | Stored In: | Sample Preparation - C0103 |
| Quantity: | 1 ea mL % Moisture: 0 | | |
| Description: | PFOA - Technical Mix | | |

| Analyte: | CAS No: | Concentration (ug/mL): | Purity: | Density: | Density Units: | Cert | Cert Val: | Lower Limit: | Upper Limit: |
|---|---|---|---|---|---|---|---|---|---|

Notes:

Approved by: _____ Approved on: _____

Authorized by: _____ Authorized on: _____

180618-04

# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

| | | | |
|---|---|---|---|
| **PRODUCT CODE:** | T-PFOA | **LOT NUMBER:** | TPFOA0217 |
| **COMPOUND:** | Technical Ammonium Perfluorooctanoate | | |
| **STRUCTURE:** | (see Table A) | **CAS #:** | 95328-99-7 (for linear ammonium perfluorooctanoate) |

| | |
|---|---|
| **MOLECULAR FORMULA:** | $C_8F_{15}O_2NH_4$ |
| **CONCENTRATION:** | 50 ± 2.5 µg/ml (gravimetric) |
| **CHEMICAL PURITY:** | Technical material |
| **SOLVENT(S):** | Methanol/Water (<1%) |
| **LAST TESTED:** (mm/dd/yyyy) | 02/16/2017 |
| **EXPIRY DATE:** (mm/dd/yyyy) | 02/16/2022 |
| **RECOMMENDED STORAGE:** | Store ampoule in a cool, dark place |

**DOCUMENTATION/ DATA ATTACHED:**

Table A: Isomeric Components and Percent Composition
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)
Figure 4: LC/MS Elution Profile of the Perfluorooctanoic Acid Isomers

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- This technical mixture is >97% ammonium perfluorooctanoate (branched and linear isomers). The remaining 3% consists of common impurities such as the perfluoroheptanoic and perfluorohexanoic acids.
- It is recommended that this solution be used as a *qualitative or semi-quantitative standard only*.
- Contains 4 mole eq. of NaOH to prevent conversion of any carboxylic acids to their corresponding methyl esters.
- The molecular weight of perfluoro-n-octanoic acid is 414.07 g/mol.

***FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE***

**Certified By:** B.G. Chittim **Date:** 02/22/2017 (mm/dd/yyyy)

*Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA*
*519-822-2436 • Fax: 519-822-2849 • info@well-labs.com*

## INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used for the identification and/or semi-quantitative determination of the specific chemical compound(s) it contains.

## HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

## CHARACTERIZATION / HOMOGENEITY:

This product is a technical mixture obtained from an industrial manufacturer. It has been characterized as to its content and components using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Testing of samples in solution has shown it to be homogeneous. As this product is a technical mixture, it should not be used to quantitate any of the listed components.

## UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value $y$ and the uncertainty of the independent parameters $x_1$, $x_2$,...$x_n$ on which it depends is:

$$u_c(y(x_1, x_2, ...x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

## TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST.

## EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

## LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

## QUALITY MANAGEMENT:

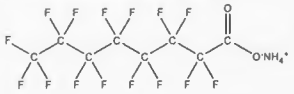
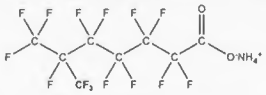
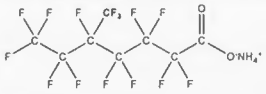
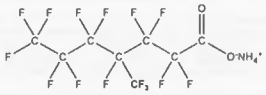
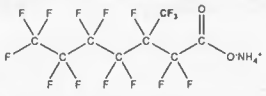
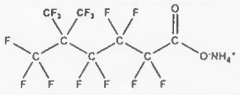
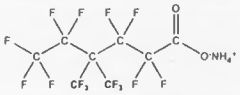
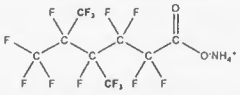
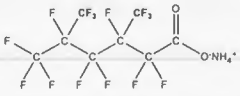
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

**For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com**

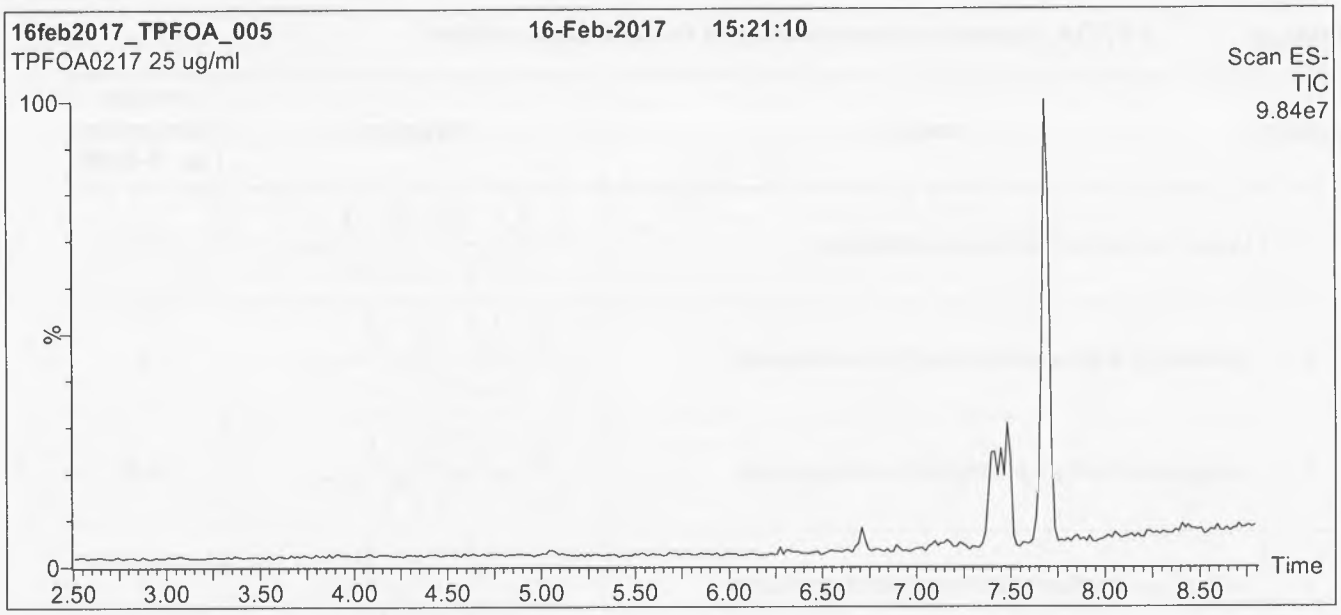
**Table A:** **T-PFOA; Isomeric Components and Percent Composition***

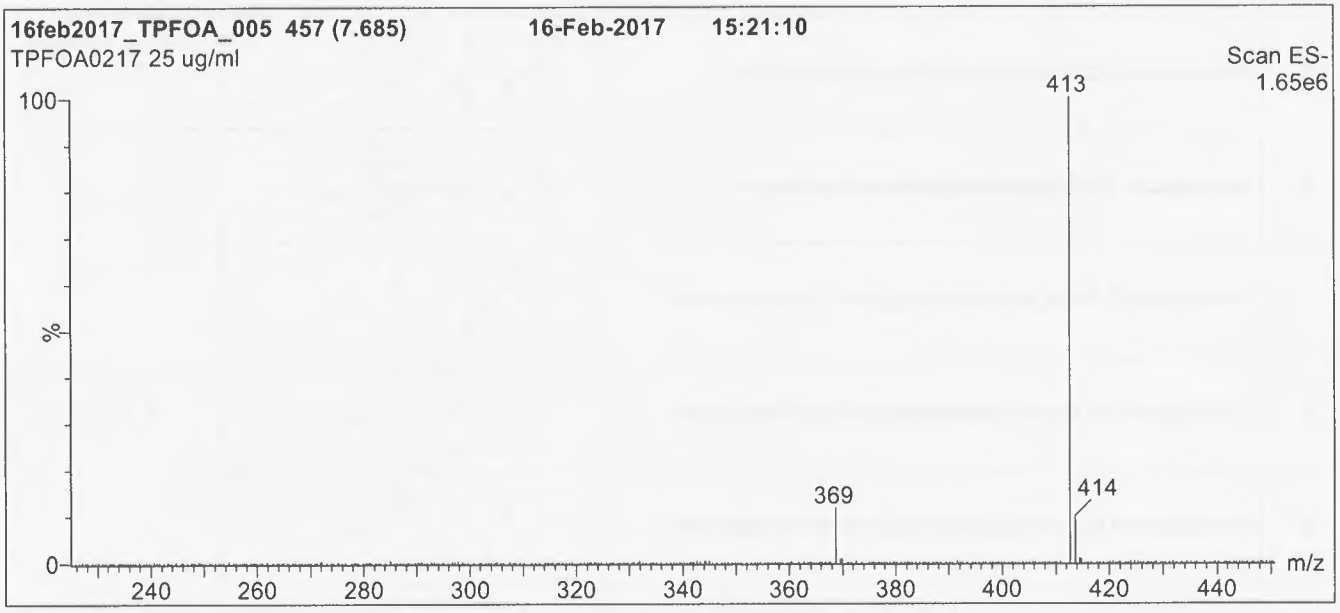
| Isomer | Name | Structure | Percent Composition by $^{19}$F-NMR |
|---|---|---|---|
| 1 | Linear ammonium perfluoro-n-octanoate |  | 79 |
| 2 | Ammonium 6-trifluoromethylperfluoroheptanoate |  | 9 |
| 3 | Ammonium 5-trifluoromethylperfluoroheptanoate |  | 4.5 |
| 4 | Ammonium 4-trifluoromethylperfluoroheptanoate |  | 4 |
| 5 | Ammonium 3-trifluoromethylperfluoroheptanoate |  | 3 |
| 6[a] | Ammonium 2-trifluoromethylperfluoroheptanoate |  | 0.5 |
| 7 | Ammonium 5,5-bis(trifluoromethyl)perfluorohexanoate |  | |
| 8 | Ammonium 4,4-bis(trifluoromethyl)perfluorohexanoate |  | |
| 9[a] | Ammonium 4,5-bis(trifluoromethyl)perfluorohexanoate |  | |
| 10 | Ammonium 3,5-bis(trifluoromethyl)perfluorohexanoate |  | |

* Percent Composition was determined by $^{19}$F-NMR. The percentages displayed are of total ammonium perfluorooctanoate isomers only (isomers are labelled in Figure 4).

[a] Presence of this isomer could not be verified by LC/MS due to co-elution.

**Figure 1:** **T-PFOA; LC/MS Data (TIC and Mass Spectrum)**




**Conditions for Figure 1:**

**LC:** **Waters Acquity Ultra Performance LC**
**MS:** **Micromass Quattro *micro* API MS**

**Chromatographic Conditions:**

Column: Kinetex PFP
2.6 µm, 4.6 x 100 mm

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% $H_2O$
(both with 10 mM $NH_4OAc$ buffer)
Ramp to 50% organic over 5 min. Ramp to
90% organic over 5 min and hold for 1.5 min.
Return to initial conditions over 0.5 min.
Time: 13 min

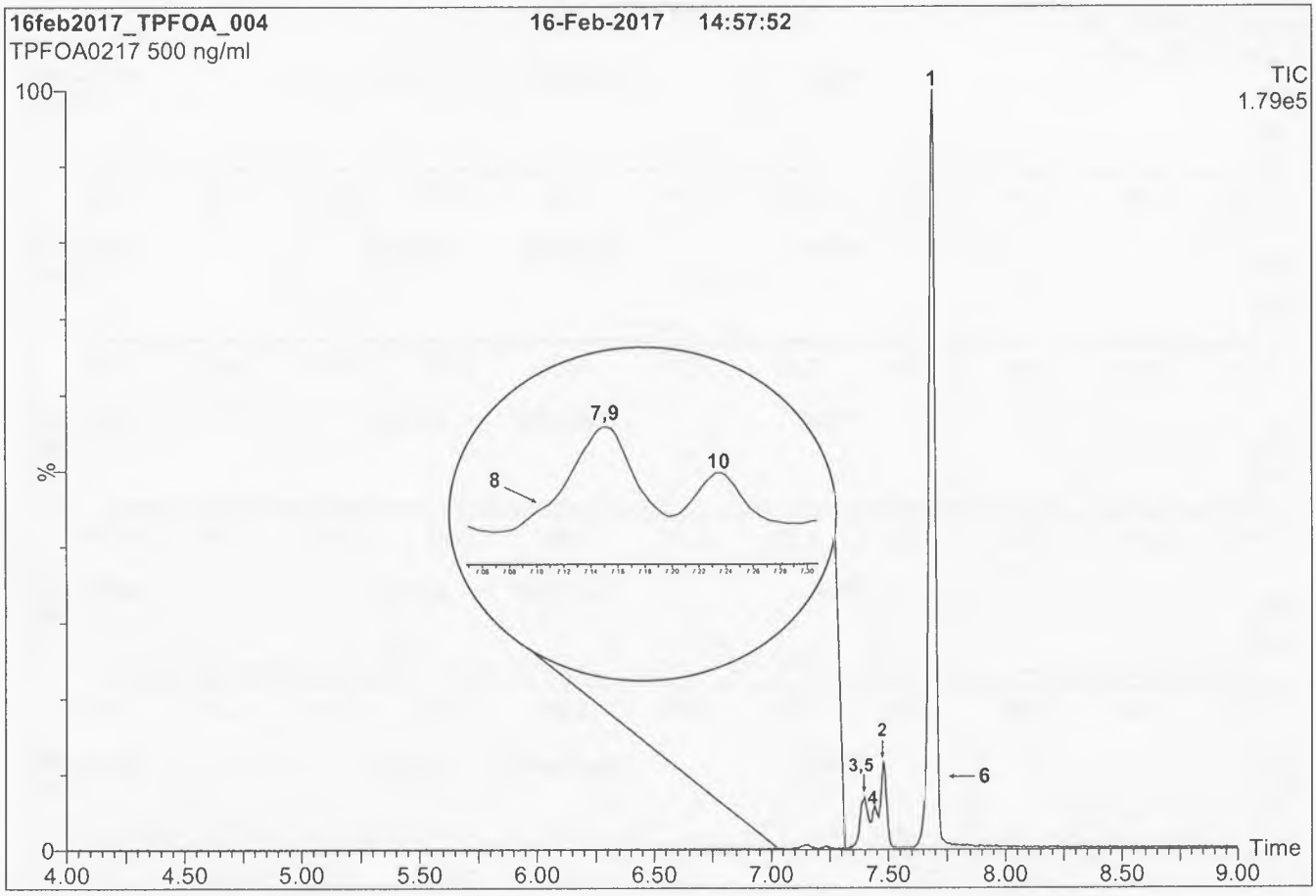
Flow: 1.0 ml/min

**MS Parameters:**

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

**Figure 2:** **T-PFOA; LC/MS Data (SIR)**




**Conditions for Figure 2:**

**LC:** **Waters Acquity Ultra Performance LC**
**MS:** **Micromass Quattro *micro* API MS**

**Chromatographic Conditions:**

Column: Kinetex PFP
2.6 µm, 4.6 x 100 mm

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% $H_2O$
(both with 10 mM $NH_4OAc$ buffer)
Ramp to 50% organic over 5 min. Ramp to
90% organic over 5 min and hold for 1.5 min.
Return to initial conditions over 0.5 min.
Time: 13 min

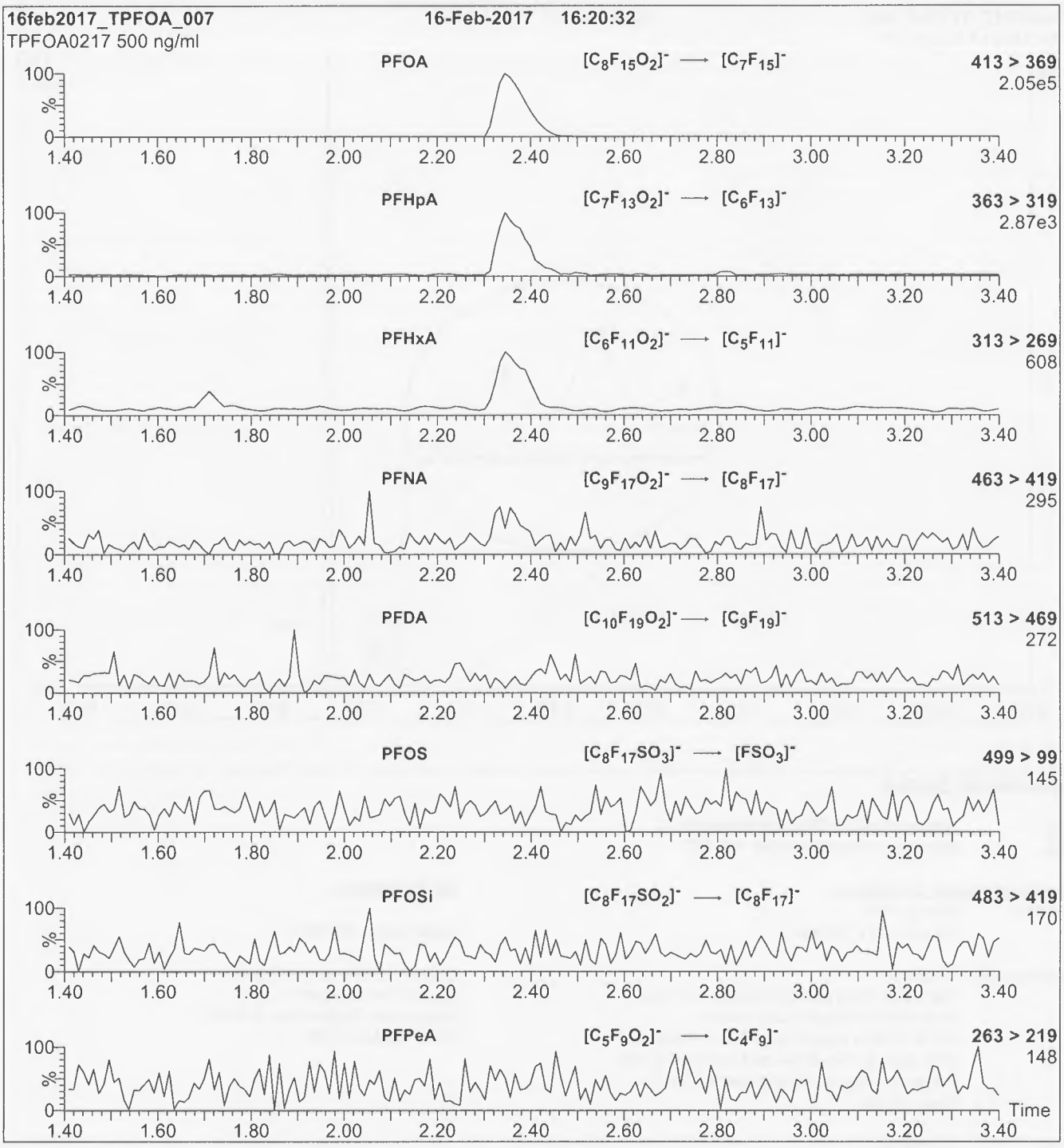
Flow: 1.0 ml/min

**MS Parameters:**

Experiment: SIR ($ES^-$)

Source conditions: see Figure 1
Source Temperature = 110 °C
Desolvation Temperature = 325 °C
Cone Voltage = 15V

**Figure 3:** **T-PFOA; LC/MS/MS Data (Selected MRM Transitions)**



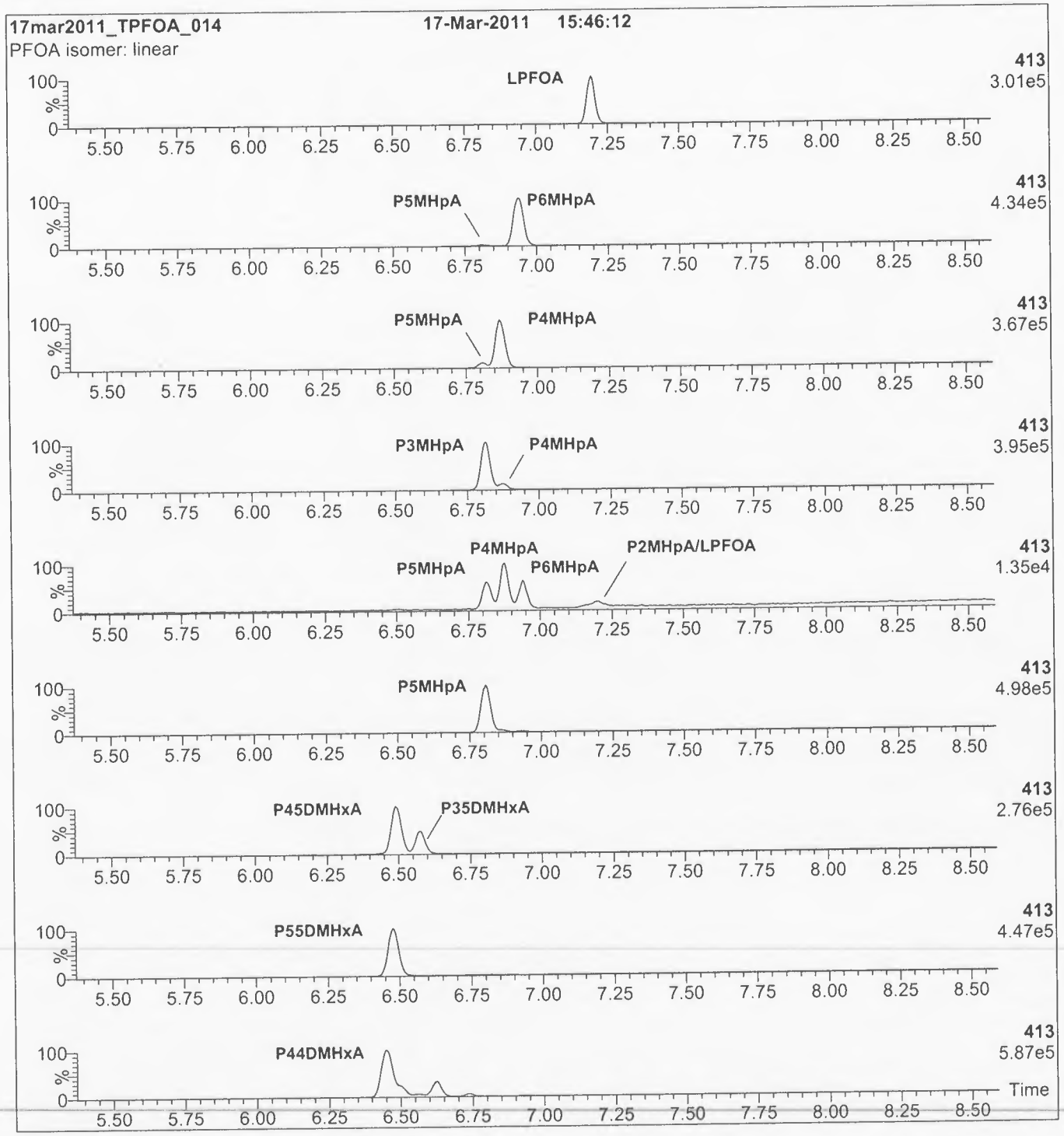

**Conditions for Figure 3:**

| | |
|---|---|
| Injection: | Direct loop injection<br>10 µl (500 ng/ml T-PFOA) |
| Mobile phase: | Isocratic 80% (80:20 MeOH:ACN) / 20% $H_2O$<br>(both with 10 mM $NH_4OAc$ buffer) |
| Flow: | 300 µl/min |

**MS Parameters**

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = variable (9-40)

**Figure 4:** **T-PFOA; LC/MS Elution Profile of the Perfluorooctanoic Acid Isomers**




**Conditions for Figure 4:**

Same as Figure 2.

BATTELLE

It can be done

BDO Id: 180618-06

# Reagent Receipt Report

Approved: ☐ Authorized ☐

| | | | |
|---|---|---|---|
| Name: | Branched PFHxS Standard (50 µg/m | Received: | 6/18/2018 |
| Vendor: | Wellington Laboratories | Custodian: | Thorn, Jonathan |
| Catalogue No: | br-PFHxSK | Expires: | 1/4/2022 |
| Type: | Solution | Consumed: | |
| Lot No: | brPFHxSK0117 | Stored In: | Sample Preparation - C0103 |
| Quantity: | 1 ea mL % Moisture: 0 | | |
| Description: | Branched PFHxS Standard (50 µg/mL) | | |

| Analyte: | CAS No: | Concentration (ug/mL): | Purity: | Density: | Density Units: | Cert | Cert Val: | Lower Limit: | Upper Limit: |
|---|---|---|---|---|---|---|---|---|---|

Notes:

Approved by: _____ Approved on: _____

Authorized by: _____ Authorized on: _____

180618-06

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

# br-PFHxSK

**Potassium Perfluorohexanesulfonate Solution/Mixture of Linear and Branched Isomers**

| | |
|---|---|
| **PRODUCT CODE:** | br-PFHxSK |
| **LOT NUMBER:** | brPFHxSK0117 |
| **CONCENTRATION:** | 50.0 ± 2.5 µg/ml (total potassium salt) |
| | 45.5 ± 2.3 µg/ml (total PFHxS anion) |
| **SOLVENT(S):** | Methanol |
| **DATE PREPARED:** (mm/dd/yyyy) | 01/03/2017 |
| **LAST TESTED:** (mm/dd/yyyy) | 01/04/2017 |
| **EXPIRY DATE:** (mm/dd/yyyy) | 01/04/2022 |
| **RECOMMENDED STORAGE:** | Store ampoule in a cool, dark place |

## DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorohexanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the identified isomeric components are given in Table A.

## DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by $^{19}$F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

## ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.5% of perfluoro-1-pentanesulfonate and ~ 0.2% of perfluoro-1-octanesulfonate.
- CAS#: 3871-99-6 (for linear isomer; potassium salt).

***FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE***

*Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA*
*519-822-2436 • Fax: 519-822-2849 • info@well-labs.com*

## INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

## HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

## SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

## HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

## UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value $y$ and the uncertainty of the independent parameters $x_1$, $x_2$,...$x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

## TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

## EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

## LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

## QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

**For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com**

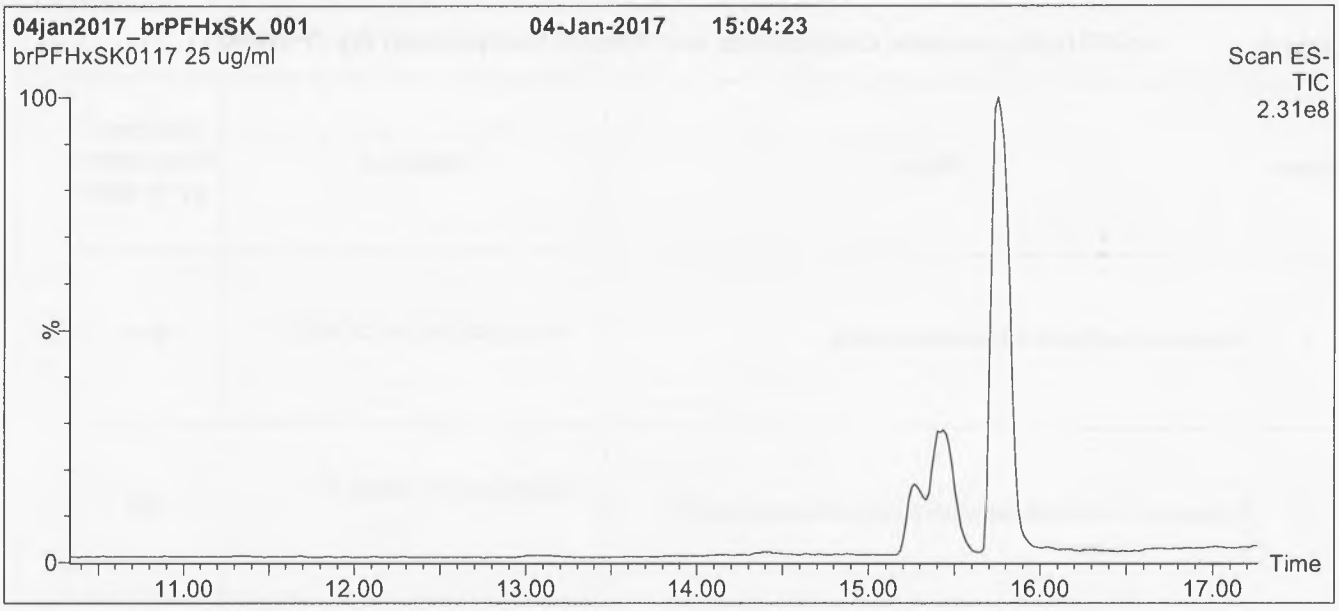
**Table A:** **br-PFHxSK; Isomeric Components and Percent Composition (by $^{19}$F-NMR)***

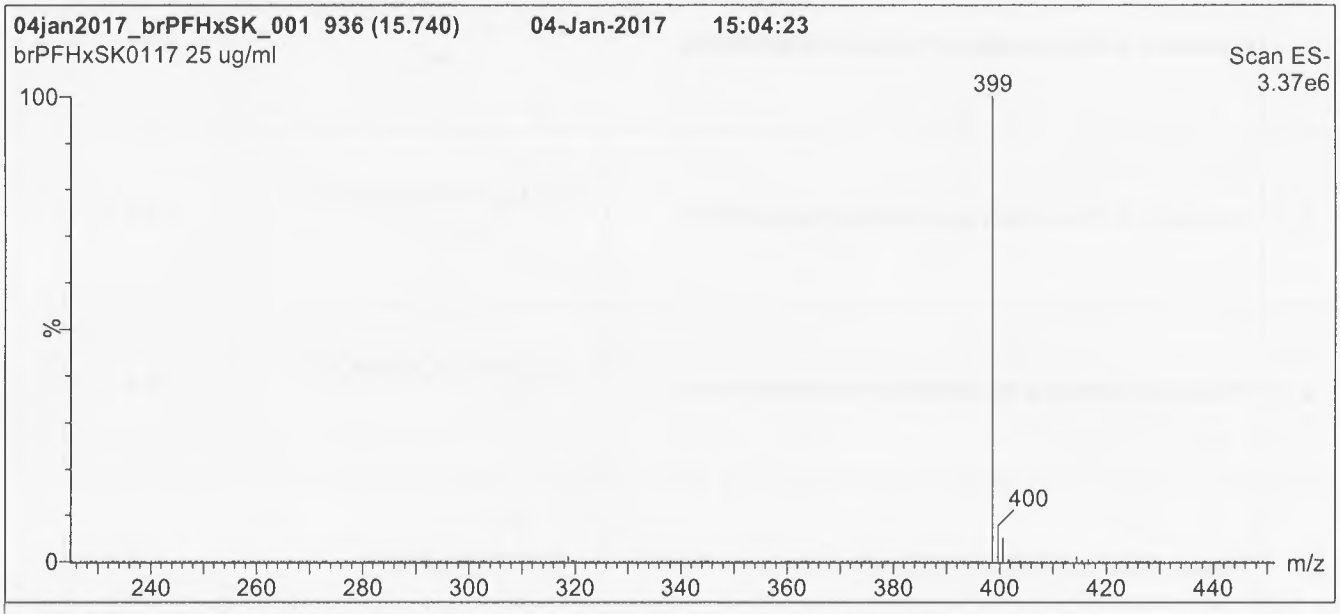
| Isomer | Name | Structure | Percent Composition by $^{19}$F-NMR |
|---|---|---|---|
| 1 | Potassium perfluoro-1-hexanesulfonate | $CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$ | 81.1 |
| 2 | Potassium 1-trifluoromethylperfluoropentanesulfonate** | $CF_3CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$ | 2.9 |
| 3 | Potassium 2-trifluoromethylperfluoropentanesulfonate | $CF_3CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$ | 1.4 |
| 4 | Potassium 3-trifluoromethylperfluoropentanesulfonate | $CF_3CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$ | 5.0 |
| 5 | Potassium 4-trifluoromethylperfluoropentanesulfonate | $CF_3CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$ | 8.9 |
| 6 | Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate | $CF_3C(CF_3)_2CF_2CF_2SO_3^-K^+$ | 0.2 |
| 7 | Other Unidentified Isomers | | 0.5 |

* Percent of total perfluorohexanesulfonate isomers only.
** Systematic Name: Potassium perfluorohexane-2-sulfonate.

**Certified By:** B.G. Chittim **Date:** 01/20/2017 (mm/dd/yyyy)

**Figure 1:** **br-PFHxSK; LC/MS Data (TIC and Mass Spectrum)**




**Conditions for Figure 1:**

**LC:** **Waters Acquity Ultra Performance LC**
**MS:** **Micromass Quattro *micro* API MS**

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield $RP_{18}$
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% $H_2O$
(both with 10 mM $NH_4OAc$ buffer)
Ramp to 50% organic over 14 min. Ramp to 90% organic over 3 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 20 min

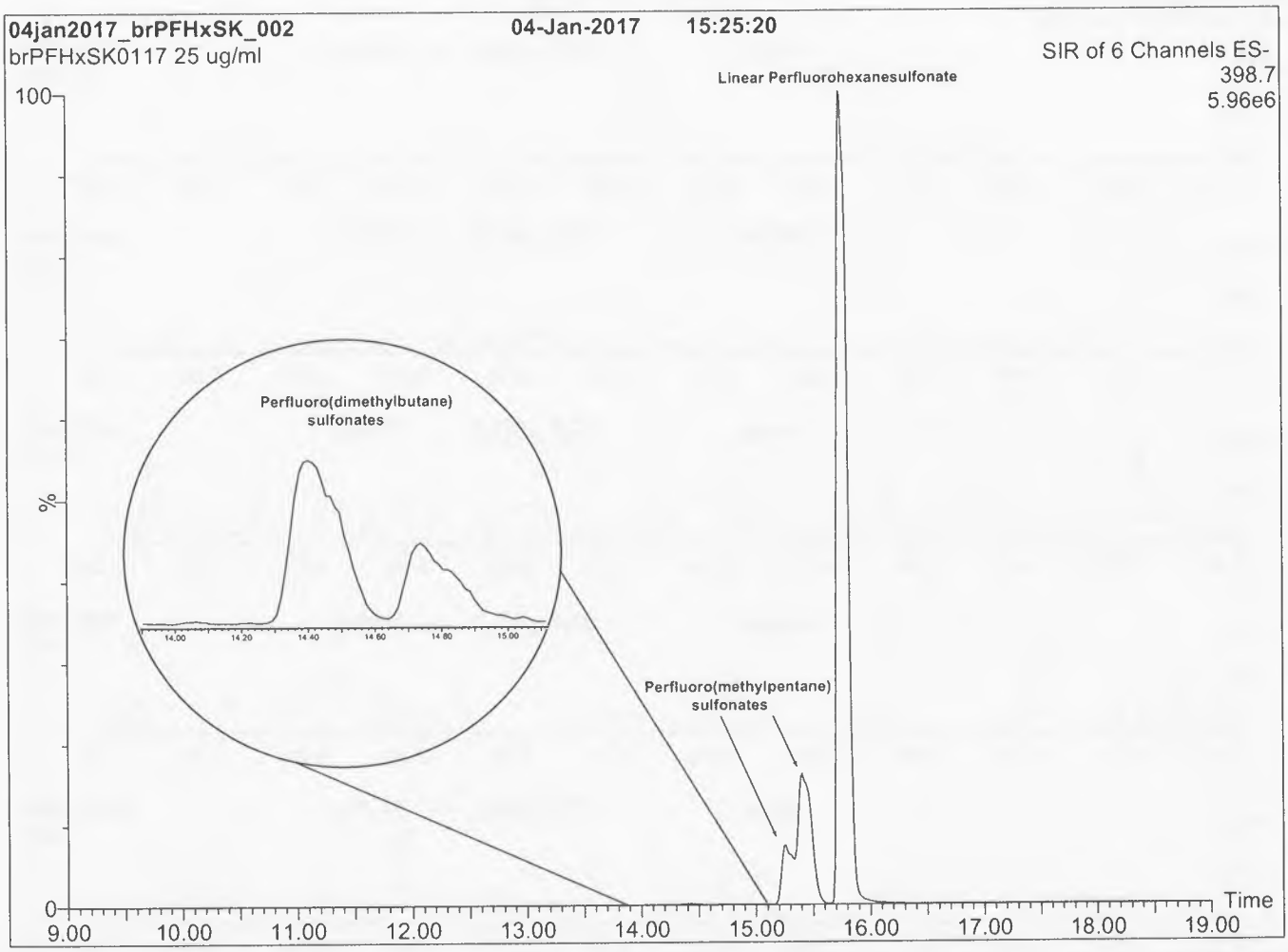
Flow: 300 µl/min

**MS Parameters**

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

**Figure 2:** **br-PFHxSK; LC/MS Data (SIR)**




**Conditions for Figure 2:**

**LC:** **Waters Acquity Ultra Performance LC**
**MS:** **Micromass Quattro *micro* API MS**

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield $RP_{18}$
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% $H_2O$
(both with 10 mM $NH_4OAc$ buffer)
Ramp to 50% organic over 14 min. Ramp to
90% organic over 3 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 20 min

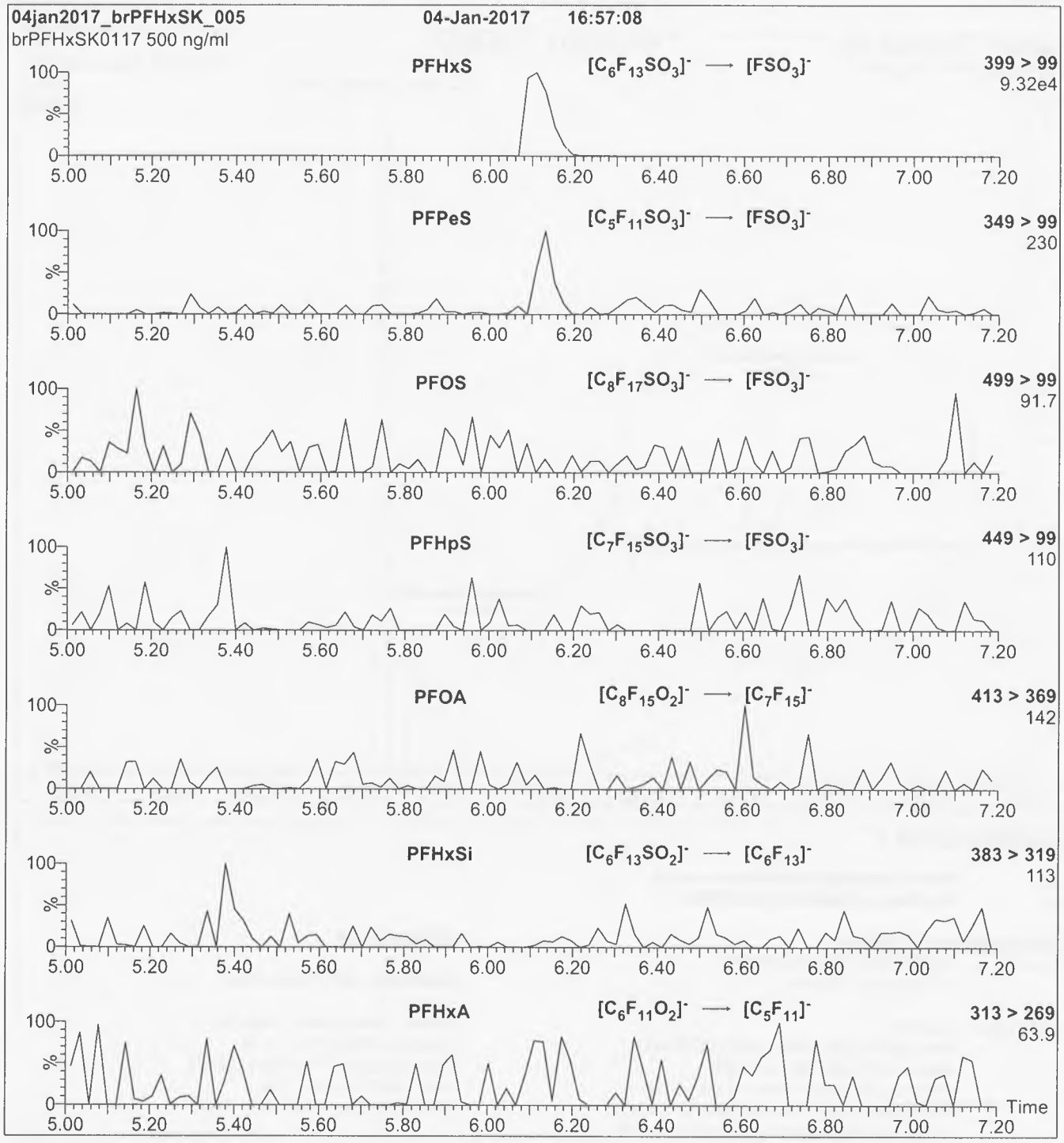
Flow: 300 µl/min

**MS Parameters**

Experiment: SIR (6 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = variable (15-62)
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

**Figure 3:** **br-PFHxSK; LC/MS/MS Data (Selected MRM Transitions)**




**Conditions for Figure 3:**

Injection: Direct loop injection
10 µl (500 ng/ml br-PFHxSK)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% $H_2O$
(both with 10 mM $NH_4OAc$ buffer)

Flow: 300 µl/min

**MS Parameters**

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 30

BATTELLE

It can be done

BDO Id: 180618-07

# Reagent Receipt Report

Approved: ☐ Authorized ☐

| | | | |
|---|---|---|---|
| **Name:** | Branched PFOS Standard (50 µg/mL | **Received:** | 6/18/2018 |
| **Vendor:** | Wellington Laboratories | **Custodian:** | Thorn, Jonathan |
| **Catalogue No:** | br-PFOSK | **Expires:** | 1/12/2022 |
| **Type:** | Solution | **Consumed:** | |
| **Lot No:** | brPFOSK0117 | **Stored In:** | Sample Preparation - C0103 |
| **Quantity:** | 1 ea mL **% Moisture:** 0 | | |
| **Description:** | Branched PFOS Standard (50 µg/mL) | | |

| Analyte: | CAS No: | Concentration (ug/mL): | Purity: | Density: | Density Units: | Cert | Cert Val: | Lower Limit: | Upper Limit: |
|---|---|---|---|---|---|---|---|---|---|

Notes:

Approved by: _____ Approved on: _____

Authorized by: _____ Authorized on: _____

180618-07

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

# br-PFOSK

**Potassium Perfluorooctanesulfonate Solution/Mixture of Linear and Branched Isomers**

| | |
|---|---|
| **PRODUCT CODE:** | br-PFOSK |
| **LOT NUMBER:** | brPFOSK0117 |
| **CONCENTRATION:** | 50 ± 2.5 µg/ml (total potassium salt) |
| | 46.4 ± 2.3 µg/ml (total PFOS anion) |
| **SOLVENT(S):** | Methanol |
| **DATE PREPARED:** (mm/dd/yyyy) | 01/09/2017 |
| **LAST TESTED:** (mm/dd/yyyy) | 01/12/2017 |
| **EXPIRY DATE:** (mm/dd/yyyy) | 01/12/2022 |
| **RECOMMENDED STORAGE:** | Store ampoule in a cool, dark place |

## DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorooctanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the isomeric components are given in Table A.

## DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by $^{19}$F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

## ADDITIONAL INFORMATION:

- See page 2 for further details.
- A 5-point calibration curve was generated using linear PFOS (potassium salt) and mass-labelled PFOS as an internal standard to enable quantitation of br-PFOSK using isotopic dilution.
- CAS#: 2795-39-3 (for linear isomer; potassium salt).

***FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE***

*Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA*
*519-822-2436 • Fax: 519-822-2849 • info@well-labs.com*

## INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

## HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

## SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

## HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

## UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value $y$ and the uncertainty of the independent parameters $x_1$, $x_2$,...$x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

## TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

## EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

## LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

## QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

**For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com**

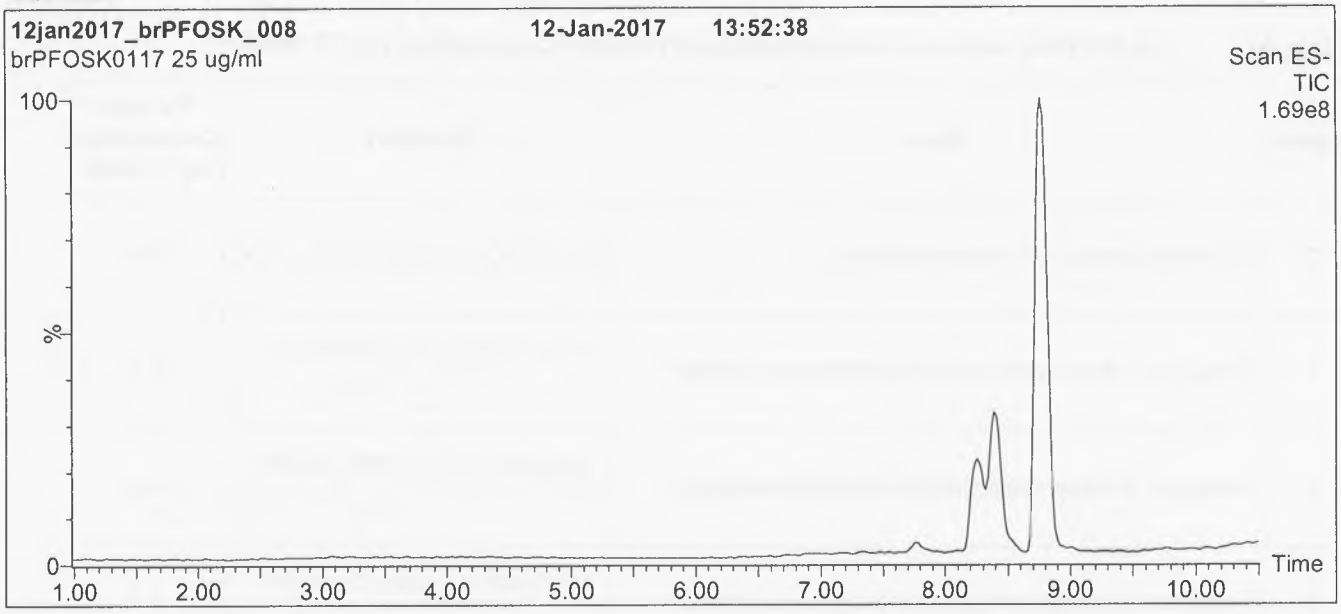
**Table A:** **br-PFOSK; Isomeric Components and Percent Composition (by $^{19}$F-NMR)***

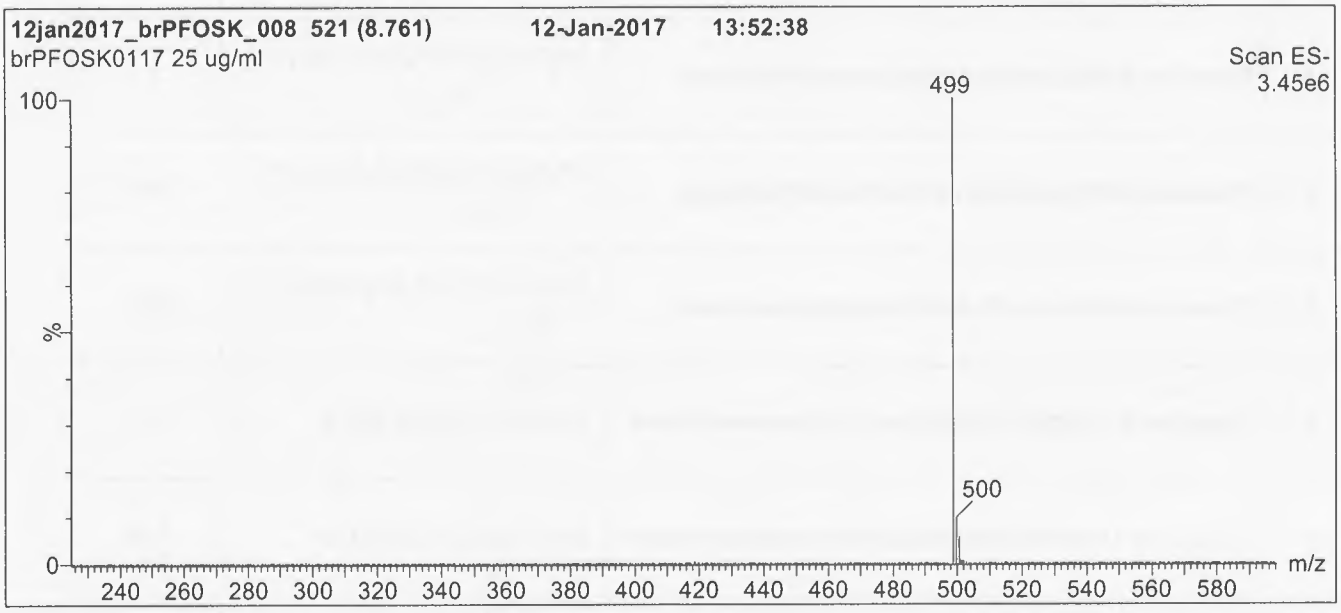
| Isomer | Name | Structure | Percent Composition by $^{19}$F-NMR |
|---|---|---|---|
| 1 | Potassium perfluoro-1-octanesulfonate | $CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$ | 78.8 |
| 2 | Potassium 1-trifluoromethylperfluoroheptanesulfonate** | $CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$ | 1.2 |
| 3 | Potassium 2-trifluoromethylperfluoroheptanesulfonate | $CF_3CF_2CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$ | 0.6 |
| 4 | Potassium 3-trifluoromethylperfluoroheptanesulfonate | $CF_3CF_2CF_2CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$ | 1.9 |
| 5 | Potassium 4-trifluoromethylperfluoroheptanesulfonate | $CF_3CF_2CF_2CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$ | 2.2 |
| 6 | Potassium 5-trifluoromethylperfluoroheptanesulfonate | $CF_3CF_2CF(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$ | 4.5 |
| 7 | Potassium 6-trifluoromethylperfluoroheptanesulfonate | $CF_3CF(CF_3)CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$ | 10.0 |
| 8 | Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate | $CF_3C(CF_3)_2CF_2CF_2CF_2SO_3^-K^+$ | 0.2 |
| 9 | Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate | $CF_3CF_2C(CF_3)_2CF_2CF_2SO_3^-K^+$ | 0.03 |
| 10 | Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate | $CF_3CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$ | 0.4 |
| 11 | Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate | $CF_3CF(CF_3)CF_2CF(CF_3)CF_2SO_3^-K^+$ | 0.07 |

* Percent of total perfluorooctanesulfonate isomers only. Isomers are labelled in Figure 2.
** Systematic Name: Potassium perfluorooctane-2-sulfonate.

**Certified By:** B.G. Chittim **Date:** 01/20/2017 (mm/dd/yyyy)

**Figure 1:** **br-PFOSK; LC/MS Data (TIC and Mass Spectrum)**




**Conditions for Figure 1:**

**LC:** **Waters Acquity Ultra Performance LC**
**MS:** **Micromass Quattro *micro* API MS**

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield $RP_{18}$
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% $H_2O$
(both with 10 mM $NH_4OAc$ buffer)
Ramp to 90% organic over 12 min and hold for 2 min.
Return to initial conditions over 0.5 min.
Time: 16 min

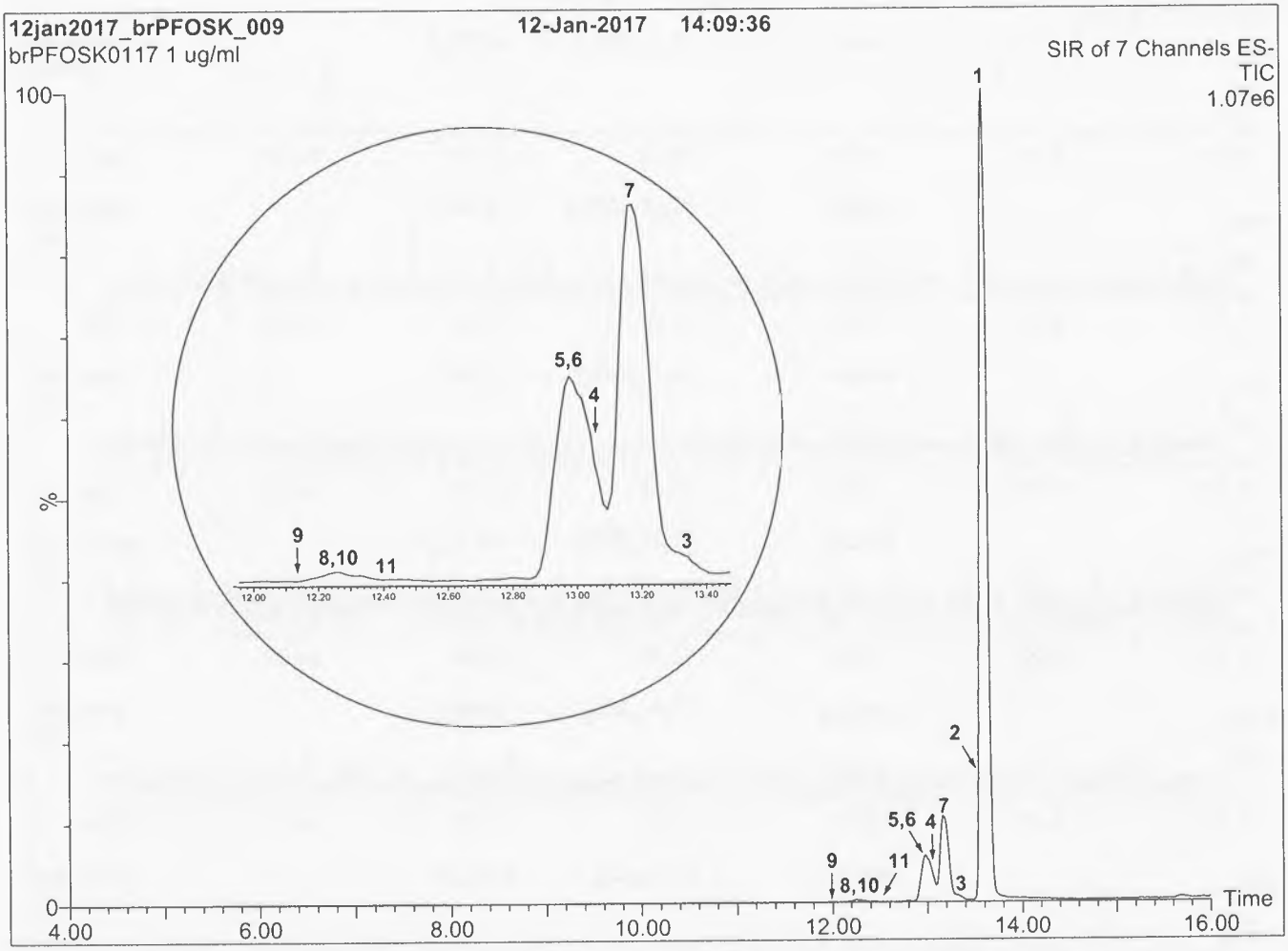
Flow: 300 µl/min

**MS Parameters**

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

**Figure 2:** **br-PFOSK; LC/MS Data (SIR)**




**Conditions for Figure 2:**

**LC:** **Waters Acquity Ultra Performance LC**
**MS:** **Micromass Quattro *micro* API MS**

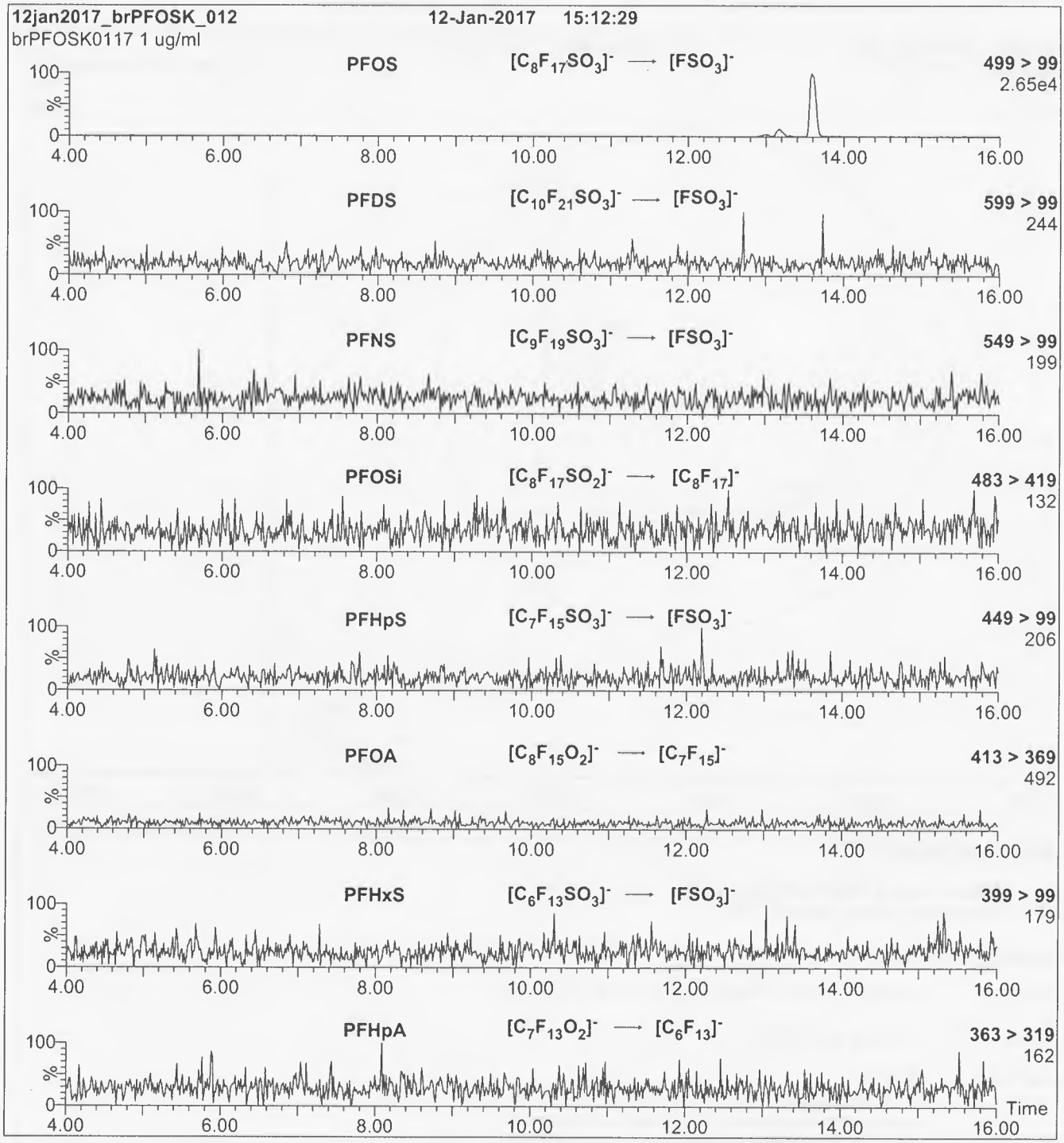
**Chromatographic Conditions:**

| | |
|---|---|
| Column: | Acquity UPLC BEH Shield $RP_{18}$ (1.7 µm, 2.1 x 100 mm) |
| Injection: | 1.0 µg/ml of br-PFOSK |
| Mobile Phase: | Gradient<br>45% (80:20 MeOH:ACN) / 55% $H_2O$ (both with 10 mM $NH_4OAc$ buffer)<br>Ramp to 90% organic over 15 min and hold for 3 min.<br>Return to initial conditions over 1 min.<br>Time: 20 min |
| Flow: | 300 µl/min |

**MS Conditions:**

SIR (ES-)
Source = 110 °C
Desolvation = 325 °C
Cone Voltage = 60V

**Figure 3:** **br-PFOSK; LC/MS/MS Data (Selected MRM Transitions)**




**Conditions for Figure 3:**

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 µl/min

**MS Parameters**

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 11-50 (variable)

CERTIFIED WEIGHT REPORT

180705-02

| | |
|---|---|
| **Part Number:** | 99207 |
| **Lot Number:** | 061918 |
| **Description:** | PFOA - DOD |
| | 24 components |
| **Expiration Date:** | 061923 |
| **Recommended Storage:** | Freezer (0 °C) |
| **Nominal Concentration (µg/mL):** | 1.0 |
| **NIST Test ID#:** | 2684186 |

| Solvent(s): | Lot# | |
|---|---|---|
| Methanol (1 mM KOH) | 061918 | (98%) |
| 2-Propanol | 23214 | (2%) |

5E-05 Balance Uncertainty
0.007 Flask Uncertainty

Volume(s) shown below were combined and diluted to (mL): 50.0

| | | |
|---|---|---|
| Formulated By: | Mario Luis | 061918 DATE |
| Reviewed By: | Pedro L. Rentas | 061918 DATE |

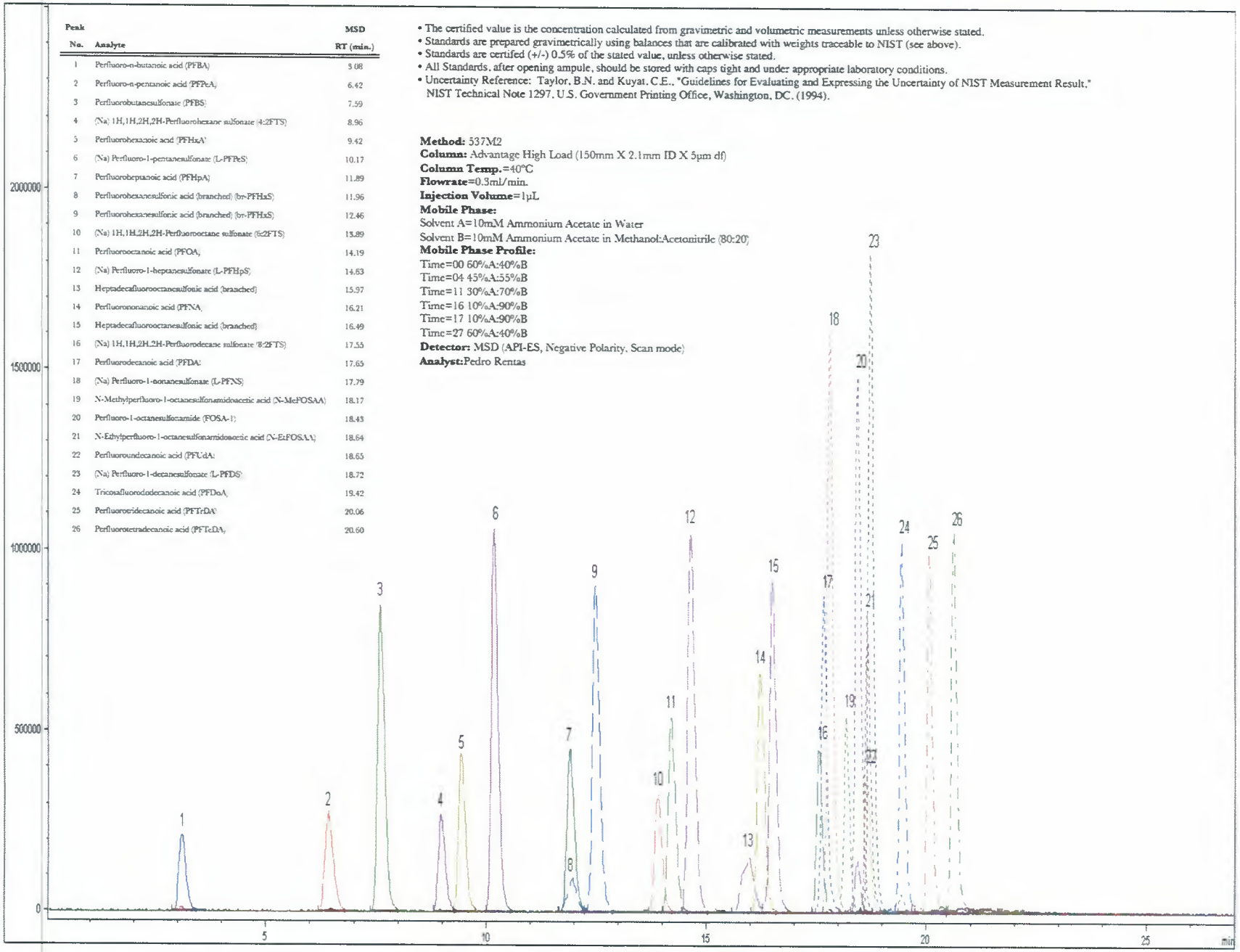
**Note: All assigned values are anion concentrations.**

| | Compound | Part Number | Lot Number | Dilution Factor | Initial Vol. (mL) | Uncertainty Pipette (mL) | Initial Conc.(µg/mL) | Final Conc.(µg/mL) | Expanded Uncertainty (+/-) (µg/mL) | SDS Information (Solvent Safety Info. On Attached pg.) CAS# | OSHA PEL (TWA) | LD50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | Perfluoro-n-butanoic acid (linear) | 99542 | 110317 | 0.02 | 1.00 | 0.004 | 50.2 | 1.00 | 0.01 | 375-22-4 | N/A | N/A |
| 2. | Perfluoro-n-pentanoic acid | 99543 | 110317 | 0.02 | 1.00 | 0.004 | 50.7 | 1.01 | 0.01 | 2706-90-3 | N/A | N/A |
| 3. | Perfluorohexanoic acid | 99199 | 030617 | 0.02 | 1.00 | 0.004 | 50.3 | 1.01 | 0.01 | 307-24-4 | N/A | N/A |
| 4. | Perfluoroheptanoic acid | 99197 | 030517 | 0.02 | 1.00 | 0.004 | 50.1 | 1.00 | 0.01 | 375-85-9 | N/A | N/A |
| 5. | Perfluorooctanoic acid | 99202 | 030617 | 0.02 | 1.00 | 0.004 | 50.2 | 1.00 | 0.01 | 335-67-1 | N/A | ipr-rat 189mg/kg |
| 6. | Perfluorononanoic acid | 99200 | 030617 | 0.02 | 1.00 | 0.004 | 50.1 | 1.00 | 0.01 | 375-95-1 | N/A | N/A |
| 7. | Perfluorodecanoic acid | 99195 | 030617 | 0.02 | 1.00 | 0.004 | 50.1 | 1.00 | 0.01 | 335-76-2 | N/A | orl-rat 57mg/kg |
| 8. | Perfluoroundecanoic acid | 99205 | 030617 | 0.02 | 1.00 | 0.004 | 50.1 | 1.00 | 0.01 | 2058-94-8 | N/A | N/A |
| 9. | Tricosafluorododecanoic acid | 99196 | 030617 | 0.02 | 1.00 | 0.004 | 50.1 | 1.00 | 0.01 | 307-55-1 | N/A | N/A |
| 10. | Perfluorotridecanoic acid | 99204 | 030617 | 0.02 | 1.00 | 0.004 | 50.1 | 1.00 | 0.01 | 72629-94-8 | N/A | N/A |
| 11. | Perfluorotetradecanoic acid | 99203 | 030617 | 0.02 | 1.00 | 0.004 | 50.1 | 1.00 | 0.01 | 376-06-7 | N/A | N/A |
| 12. | Perfluoro-1-octanesulfonamide | 3677 | FOSA0817I | 0.02 | 1.00 | 0.004 | 50.0 | 1.00 | 0.01 | 754-91-6 | N/A | N/A |
| 13. | N-Methylperfluoro-1-octanesulfonamidoacetic acid | 3667 | NMeFOSAA0118 | 0.02 | 1.00 | 0.004 | 50.0 | 1.00 | 0.01 | 2355-31-9 | N/A | N/A |
| 14. | N-Ethylperfluoro-1-octanesulfonamidoacetic acid | 3664 | NEtFOSAA0118 | 0.02 | 1.00 | 0.004 | 50.0 | 1.00 | 0.01 | 2991-50-6 | N/A | N/A |
| 15. | Perfluorobutanesulfonic acid | 99194 | 031017 | 0.02 | 1.00 | 0.004 | 50.7 | 1.01 | 0.01 | 375-73-5 | N/A | N/A |
| 16. | Perfluoro-1-pentanesulfonate | 99544 | 111017 | 0.02 | 0.98 | 0.004 | 51.3 | 1.00 | 0.01 | 630402-22-1 | N/A | N/A |
| 17. | Perfluorohexanesulfonic acid (branched) | 99198 | 030617 | 0.02 | 1.00 | 0.004 | 50.6 | 1.01 | 0.01 | 3871-99-6 | N/A | N/A |
| 18. | Perfluoro-1-heptanesulfonic acid | 3672 | LPFHpS0817 | 0.021 | 1.05 | 0.004 | 47.6 | 1.00 | 0.01 | 375-92-8 | N/A | N/A |
| 19. | Heptadecafluorooctanesulfonic acid (branched) | 99201 | 030617 | 0.02 | 1.00 | 0.004 | 50.2 | 1.00 | 0.01 | 1763-23-1 | N/A | N/A |
| 20. | Perfluoro-1-nonanesulfonic acid | 3957 | LPFNS0917 | 0.021 | 1.05 | 0.004 | 48.0 | 1.01 | 0.01 | 98789-57-2 | N/A | N/A |
| 21. | Perfluoro-1-decanesulfonic acid | 3671 | LPFDS0217 | 0.021 | 1.05 | 0.004 | 48.2 | 1.01 | 0.01 | 2806-15-7 | N/A | N/A |
| 22. | 1H,1H,2H,2H-Perfluorohexane sulfonic acid | 3955 | 42FTS1216 | 0.0214 | 1.07 | 0.004 | 46.7 | 1.00 | 0.01 | 00-00-0 | N/A | N/A |
| 23. | 1H,1H,2H,2H-Perfluorooctane sulfonic acid | 3661 | 62FTS0616 | 0.021 | 1.05 | 0.004 | 47.4 | 1.00 | 0.01 | 27619-97-2 | N/A | N/A |
| 24. | 1H,1H,2H,2H-Perfluorodecane sulfonic acid | 3662 | 82FTS1216 | 0.021 | 1.05 | 0.004 | 47.9 | 1.01 | 0.01 | 39108-34-4 | N/A | N/A |

| Peak No. | Analyte | MSD RT (min.) |
|---|---|---|
| 1 | Perfluoro-n-butanoic acid (PFBA) | 5.08 |
| 2 | Perfluoro-n-pentanoic acid (PFPeA) | 6.42 |
| 3 | Perfluorobutanesulfonate (PFBS) | 7.59 |
| 4 | (Na) 1H,1H,2H,2H-Perfluorohexane sulfonate (4:2FTS) | 8.96 |
| 5 | Perfluorohexanoic acid (PFHxA) | 9.42 |
| 6 | (Na) Perfluoro-1-pentanesulfonate (L-PFPeS) | 10.17 |
| 7 | Perfluoroheptanoic acid (PFHpA) | 11.89 |
| 8 | Perfluorohexanesulfonic acid (branched) (br-PFHxS) | 11.96 |
| 9 | Perfluorohexanesulfonic acid (branched) (br-PFHxS) | 12.46 |
| 10 | (Na) 1H,1H,2H,2H-Perfluorooctane sulfonate (6:2FTS) | 13.89 |
| 11 | Perfluorooctanoic acid (PFOA) | 14.19 |
| 12 | (Na) Perfluoro-1-heptanesulfonate (L-PFHpS) | 14.63 |
| 13 | Heptadecafluorooctanesulfonic acid (branched) | 15.97 |
| 14 | Perfluorononanoic acid (PFNA) | 16.21 |
| 15 | Heptadecafluorooctanesulfonic acid (branched) | 16.49 |
| 16 | (Na) 1H,1H,2H,2H-Perfluorodecane sulfonate (8:2FTS) | 17.55 |
| 17 | Perfluorodecanoic acid (PFDA) | 17.65 |
| 18 | (Na) Perfluoro-1-nonanesulfonate (L-PFNS) | 17.79 |
| 19 | N-Methylperfluoro-1-octanesulfonamidoacetic acid (N-MeFOSAA) | 18.17 |
| 20 | Perfluoro-1-octanesulfonamide (FOSA-1) | 18.43 |
| 21 | N-Ethylperfluoro-1-octanesulfonamidoacetic acid (N-EtFOSAA) | 18.64 |
| 22 | Perfluoroundecanoic acid (PFUdA) | 18.65 |
| 23 | (Na) Perfluoro-1-decanesulfonate (L-PFDS) | 18.72 |
| 24 | Tricosafluorododecanoic acid (PFDoA) | 19.42 |
| 25 | Perfluorotridecanoic acid (PFTrDA) | 20.06 |
| 26 | Perfluorotetradecanoic acid (PFTeDA) | 20.60 |

- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

**Method:** 537M2
**Column:** Advantage High Load (150mm X 2.1mm ID X 5µm df)
**Column Temp.**=40°C
**Flowrate**=0.3mL/min.
**Injection Volume**=1µL
**Mobile Phase:**
Solvent A=10mM Ammonium Acetate in Water
Solvent B=10mM Ammonium Acetate in Methanol:Acetonitrile (80:20)
**Mobile Phase Profile:**
Time=00 60%A:40%B
Time=04 45%A:55%B
Time=11 30%A:70%B
Time=16 10%A:90%B
Time=17 10%A:90%B
Time=27 60%A:40%B
**Detector:** MSD (API-ES, Negative Polarity, Scan mode)
**Analyst:**Pedro Rentas



BATTELLE
It can be done

BDO Id: 180726-04

# Reagent Receipt Report

Approved: ☑ Authorized ☐

| | | | |
|---|---|---|---|
| **Name:** | Mass-labelled PFAS injection standar | **Received:** | 7/26/2018 |
| **Vendor:** | Wellington Laboratories | **Custodian:** | Thorn, Jonathan |
| **Catalogue No:** | MPFAC-C-IS | **Expires:** | 5/2/2022 |
| **Type:** | Solution | **Consumed:** | |
| **Lot No:** | MPFACCIS0516 | **Stored In:** | LC Laboratory - R0107 |
| **Quantity:** | 2 ea 1.2 mL **% Moisture:** 0 | | |
| **Description:** | Mass-labelled PFAS injection standards | | |

| Analyte: | CAS No: | Concentration (ug/mL): | Purity: | Density: | Density Units: | Cert | Cert Val: | Lower Limit: | Upper Limit: |
|---|---|---|---|---|---|---|---|---|---|
| 13C2-PFDA | BDO-2110 | 2.0000 | 100.00 | -- | -- | ☐ | | | |
| 13C2-PFOA | BDO-2107 | 2.0000 | 100.00 | -- | -- | ☐ | | | |
| 13C3-PFBA | BDO-2231 | 2.0000 | 100.00 | -- | -- | ☐ | | | |
| 13C4-PFOS | BDO-2121 | 1.9140 | 100.00 | -- | -- | ☐ | | | |

**Total Analytes:** 4

**Notes:**

**Approved by:** Lizotte Jr, Robert **Approved on:** 7/27/2018 11:10:00 AM

**Authorized by:** **Authorized on:**

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

# MPFAC-C-IS

## Mass-Labelled Perfluorinated Compound Injection Standards Solution

| | |
|---|---|
| **PRODUCT CODE:** | MPFAC-C-IS |
| **LOT NUMBER:** | MPFACCIS0516 |
| **SOLVENT(S):** | Methanol / Water (<1%) |
| **DATE PREPARED:** (mm/dd/yyyy) | 05/24/2016 |
| **LAST TESTED:** (mm/dd/yyyy) | 05/02/2017 |
| **EXPIRY DATE:** (mm/dd/yyyy) | 05/02/2022 |
| **RECOMMENDED STORAGE:** | Store ampoule in a cool, dark place |

**DESCRIPTION:**

MPFAC-C-IS is a solution/mixture of mass-labelled ($^{13}C$) perfluoroalkylcarboxylic acids and a mass-labelled ($^{13}C$) perfluoroalkylsulfonate. The components and their concentrations are given in Table A.

MPFAC-C-IS was designed for, and prepared to be used with, PFC-CVS-C.

The individual mass-labelled perfluoroalkylcarboxylic acids and mass-labelled perfluoroalkylsulfonate all have chemical purities of >98% and isotopic purities of ≥99%.

**DOCUMENTATION/ DATA ATTACHED:**

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- The mass-labelled perfluoroalkylsulfonate compound concentration is reported as the salt.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

***FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE***

*Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA*
*519-822-2436 • Fax: 519-822-2849 • info@well-labs.com*

## INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

## HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

## SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

## HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

## UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value $y$ and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

## TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

## EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

## LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

## QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

**For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com**

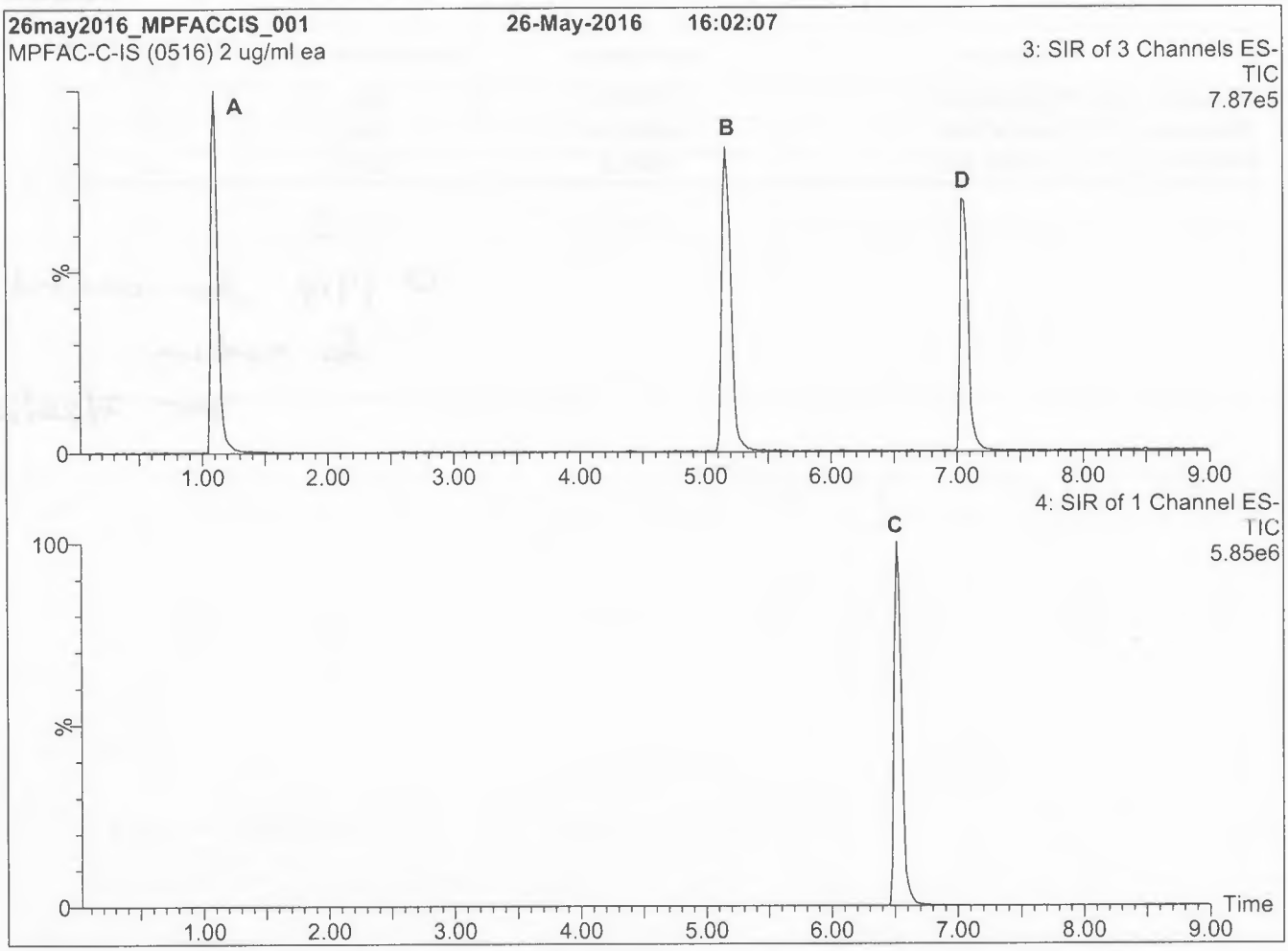
**Table A:** **MPFAC-C-IS; Components and Concentrations (ng/ml; ± 5% in Methanol / Water (<1%))**

| Compound | Abbreviation | Concentration (ng/ml) | Peak Assignment in Figure 1 |
|---|---|---|---|
| Perfluoro-n-[2,3,4-$^{13}C_3$]butanoic acid | M3PFBA | 2000 | A |
| Perfluoro-n-[1,2-$^{13}C_2$]octanoic acid | M2PFOA | 2000 | B |
| Perfluoro-n-[1,2-$^{13}C_2$]decanoic acid | MPFDA | 2000 | D |
| | | | |
| Sodium perfluoro-1-[1,2,3,4-$^{13}C_4$]octanesulfonate | MPFOS | 2000 ① | C |

① 1914 when corrected for sodium
JMG 7/26/2017

**Certified By:** _____ **Date:** 05/04/2017
(mm/dd/yyyy)
B.G. Chittim, General Manager

**Figure 1:** **MPFAC-C-IS; LC/MS Data (Total Ion Current Chromatogram; SIR)**




**Conditions for Figure 1:**

**LC:** **Waters Acquity Ultra Performance LC**
**MS:** **Micromass Quattro *micro* API MS**

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield $RP_{18}$
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% $H_2O$
(both with 10 mM $NH_4OAc$ buffer)
Ramp to 90% organic over 8 min
and hold for 2 min before returning
to initial conditions in 1 min.
Time: 12 min

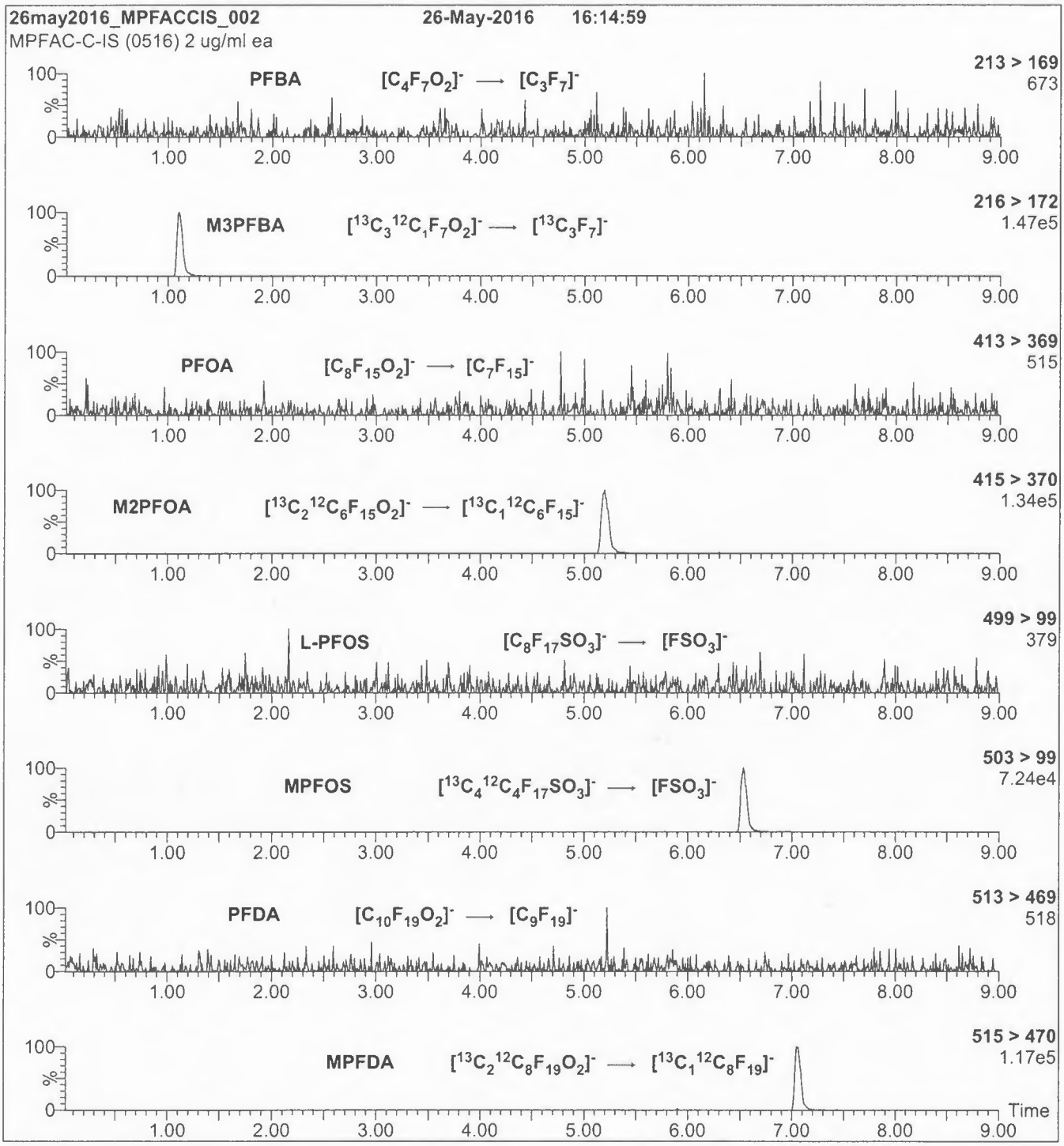
Flow: 300 µl/min

**MS Parameters**

Experiment: SIR

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = variable (10-80)
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

**Figure 2:** **MPFAC-C-IS; LC/MS/MS Data (Selected MRM Transitions)**




**Conditions for Figure 2:**

Injection: On-column (MPFAC-C-IS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

**MS Parameters**

Collision Gas (mbar) = 3.50e-3

Collision Energy (eV) = 8-50 (variable)

BATTELLE

It can be done

BDO Id: 180726-05

# Reagent Receipt Report

Approved: ☑ Authorized ☐

**Name:** Mass-labelled PFAS Extraction Stand
**Vendor:** Wellington Laboratories
**Catalogue No:** MPFAC-24ES
**Type:** Solution
**Lot No:** MPFAC24ES0218
**Quantity:** 2 ea 1.2 mL **% Moisture:** 0
**Description:** Mass-labelled PFAS Extraction Standard Solution

**Received:** 7/26/2018
**Custodian:** Thorn, Jonathan
**Expires:** 2/7/2023
**Consumed:**
**Stored In:** LC Laboratory - R0107

| Analyte: | CAS No: | Concentration (ug/mL): | Purity: | Density: | Density Units: | Cert | Cert Val: | Lower Limit: | Upper Limit: |
|---|---|---|---|---|---|---|---|---|---|
| 13C2-4:2FTS | BDO-2229 | 0.9350 | 100.00 | -- | -- | ☐ | | | |
| 13C2-6:2FTS | BDO-2230 | 0.9490 | 100.00 | -- | -- | ☐ | | | |
| 13C2-8:2FTS | BDO-2220 | 0.9580 | 100.00 | -- | -- | ☐ | | | |
| 13C2-PFDoA | BDO-2112 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| 13C2-PFTeDA | BDO-2224 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| 13C3-PFBS | BDO-2226 | 0.9290 | 100.00 | -- | -- | ☐ | | | |
| 13C3-PFHxS | BDO-2227 | 0.9460 | 100.00 | -- | -- | ☐ | | | |
| 13C4-PFBA | BDO-2105 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| 13C4-PFHpA | BDO-2218 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| 13C5-PFHxA | BDO-2217 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| 13C5-PFPeA | BDO-2216 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| 13C6-PFDA | BDO-2222 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| 13C7-PFUnA | BDO-2223 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| 13C8-FOSA | BDO-2225 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| 13C8-PFOA | BDO-2219 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| 13C8-PFOS | BDO-2228 | 0.9570 | 100.00 | -- | -- | ☐ | | | |
| 13C9-PFNA | BDO-2221 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| d3-MeFOSAA | BDO-1838 | 1.0000 | 100.00 | -- | -- | ☐ | | | |
| d5-EtFOSAA | BDO-1839 | 1.0000 | 100.00 | -- | -- | ☐ | | | |

**Total Analytes:** 19

**Notes:**

**Approved by:** Lizotte Jr, Robert **Approved on:** 7/27/2018 11:10:00 AM
**Authorized by:** **Authorized on:**

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

# MPFAC-24ES

**Mass-Labelled Per- and Poly-fluoroalkyl Substance Extraction Standard Solution**

| | |
|---|---|
| **PRODUCT CODE:** | MPFAC-24ES |
| **LOT NUMBER:** | MPFAC24ES0218 |
| **SOLVENT(S):** | Methanol / Isopropanol (2%) / Water (<1%) |
| **DATE PREPARED:** (mm/dd/yyyy) | 02/07/2018 |
| **LAST TESTED:** (mm/dd/yyyy) | 02/07/2018 |
| **EXPIRY DATE:** (mm/dd/yyyy) | 02/07/2023 |
| **RECOMMENDED STORAGE:** | Refrigerate ampoule |

**DESCRIPTION:**

MPFAC-24ES is a solution/mixture of ten mass-labelled ($^{13}C$) perfluoroalkylcarboxylic acids ($C_4$-$C_{12}$ and $C_{14}$), three mass-labelled ($^{13}C$) perfluoroalkylsulfonates ($C_4$, $C_6$, and $C_8$), three mass-labelled ($^{13}C$) telomer sulfonates (4:2, 6:2, and 8:2), two mass-labelled ($^{2}H$) perfluorooctanesulfonamidoacetic acids, and perfluoro-1-[$^{13}C_8$]octanesulfonamide. The components and their concentrations are given in Table A.

The individual mass-labelled perfluoroalkylcarboxylic acids, mass-labelled perfluoroalkylsulfonates, mass-labelled telomer sulfonates, and perfluoro-1-[$^{13}C_8$]octanesulfonamide all have chemical purities of >98% and isotopic purities of ≥99%. The individual mass-labelled perfluorooctanesulfonamidoacetic acids all have chemical purities of >98% and isotopic purities of ≥98%.

**DOCUMENTATION/ DATA ATTACHED:**

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

***FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE***

*Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA*
*519-822-2436 • Fax: 519-822-2849 • info@well-labs.com*

## INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

## HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

## SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

## HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

## UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value $y$ and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

## TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

## EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

## LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

## QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED 9017034 REFERENCE MATERIAL PRODUCER

**For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com**

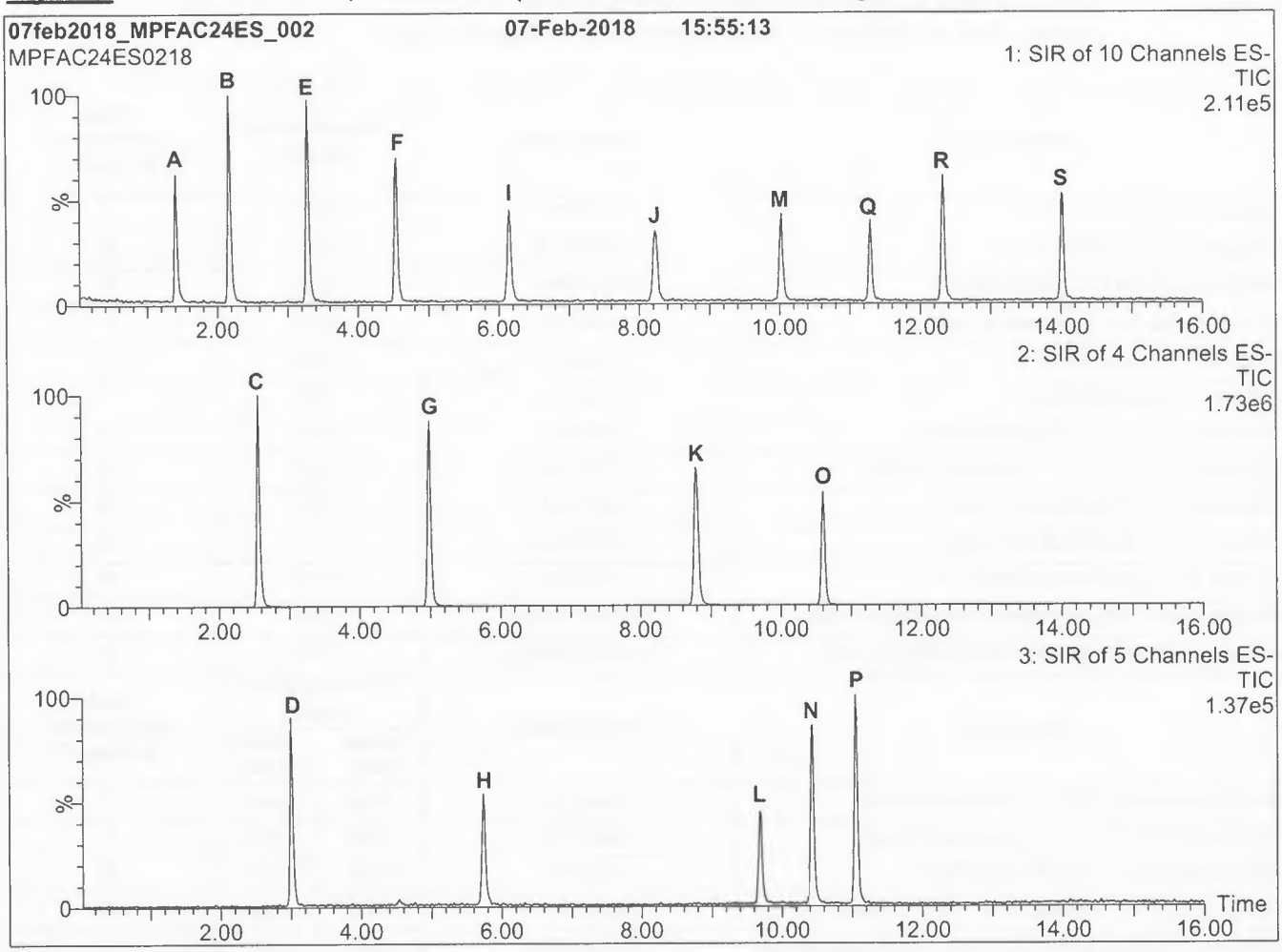
**Table A:** **MPFAC-24ES; Components and Concentrations (ng/ml, ± 5% in Methanol / Isopropanol (2%) / Water (<1%))**

| Compound | Abbreviation | Concentration (ng/ml) | | Peak Assignment in Figure 1 |
|---|---|---|---|---|
| Perfluoro-n-[$^{13}C_4$]butanoic acid | MPFBA | 1000 | | A |
| Perfluoro-n-[$^{13}C_5$]pentanoic acid | M5PFPeA | 1000 | | B |
| Perfluoro-n-[1,2,3,4,6-$^{13}C_5$]hexanoic acid | M5PFHxA | 1000 | | E |
| Perfluoro-n-[1,2,3,4-$^{13}C_4$]heptanoic acid | M4PFHpA | 1000 | | F |
| Perfluoro-n-[$^{13}C_8$]octanoic acid | M8PFOA | 1000 | | I |
| Perfluoro-n-[$^{13}C_9$]nonanoic acid | M9PFNA | 1000 | | J |
| Perfluoro-n-[1,2,3,4,5,6-$^{13}C_6$]decanoic acid | M6PFDA | 1000 | | M |
| Perfluoro-n-[1,2,3,4,5,6,7-$^{13}C_7$]undecanoic acid | M7PFUdA | 1000 | | Q |
| Perfluoro-n-[1,2-$^{13}C_2$]dodecanoic acid | MPFDoA | 1000 | | R |
| Perfluoro-n-[1,2-$^{13}C_2$]tetradecanoic acid | M2PFTeDA | 1000 | | S |
| Perfluoro-1-[$^{13}C_8$]octanesulfonamide | M8FOSA | 1000 | | O |
| N-methyl-$d_3$-perfluoro-1-octanesulfonamidoacetic acid | d3-N-MeFOSAA | 1000 | | N |
| N-ethyl-$d_5$-perfluoro-1-octanesulfonamidoacetic acid | d5-N-EtFOSAA | 1000 | | P |
| **Compound** | **Abbreviation** | **Concentration (ng/ml)** | | **Peak Assignment in Figure 1** |
| | | **as the salt** | **as the anion** | |
| Sodium perfluoro-1-[2,3,4-$^{13}C_3$]butanesulfonate | M3PFBS | 1000 | 929 | C |
| Sodium perfluoro-1-[1,2,3-$^{13}C_3$]hexanesulfonate | M3PFHxS | 1000 | 946 | G |
| Sodium perfluoro-1-[$^{13}C_8$]octanesulfonate | M8PFOS | 1000 | 957 | K |
| Sodium 1H,1H,2H,2H-perfluoro-1-[1,2-$^{13}C_2$]hexanesulfonate | M2-4:2FTS | 1000 | 935 | D |
| Sodium 1H,1H,2H,2H-perfluoro-1-[1,2-$^{13}C_2$]octanesulfonate | M2-6:2FTS | 1000 | 949 | H |
| Sodium 1H,1H,2H,2H-perfluoro-1-[1,2-$^{13}C_2$]decanesulfonate | M2-8:2FTS | 1000 | 958 | L |

**Certified By:** _____ **Date:** 02/09/2018 (mm/dd/yyyy)

B.G. Chittim, General Manager

**Figure 1:** **MPFAC-24ES; LC/MS Data (Total Ion Current Chromatogram; SIR)**




**Conditions for Figure 1:**

**LC:** **Waters Acquity Ultra Performance LC**
**MS:** **Micromass Quattro *micro* API MS**

**Chromatographic Conditions**

Column: Acquity UPLC BEH Shield $RP_{18}$
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% $H_2O$
(both with 10 mM $NH_4OAc$ buffer)
Ramp to 55% organic over 3.5 min.
Ramp to 70% organic over 6.5 min.
Ramp to 85% organic over 5 min and hold for
1 min before returning to initial conditions in 0.5 min.
Time: 17 min

Flow: 300 µl/min

**MS Parameters**

Experiment: SIR

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = variable (10-60)
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

**Figure 2:** **MPFAC-24ES; LC/MS/MS Data (Selected MRM Transitions)**

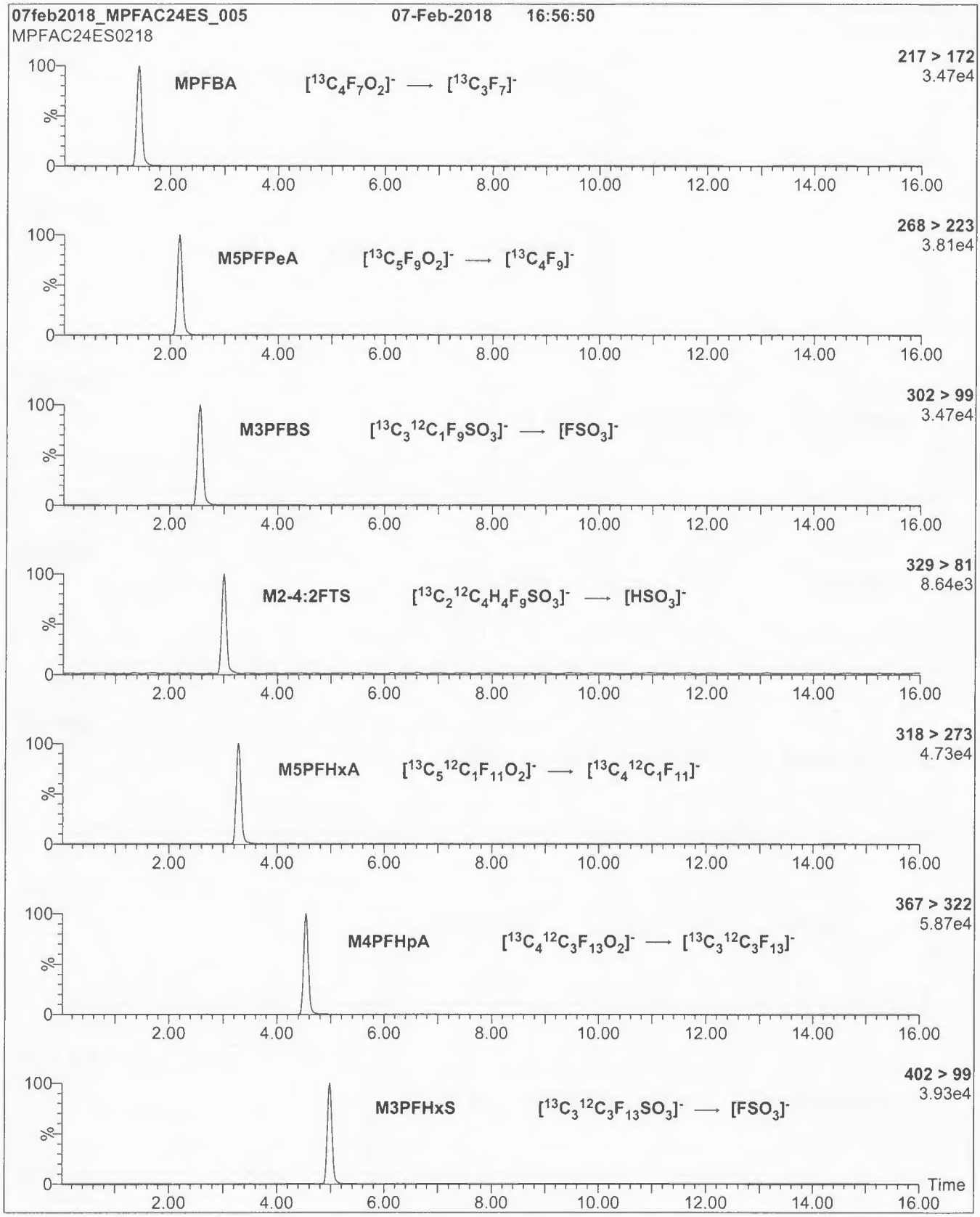


**Figure 2:** **MPFAC-24ES; LC/MS/MS Data (Selected MRM Transitions)**

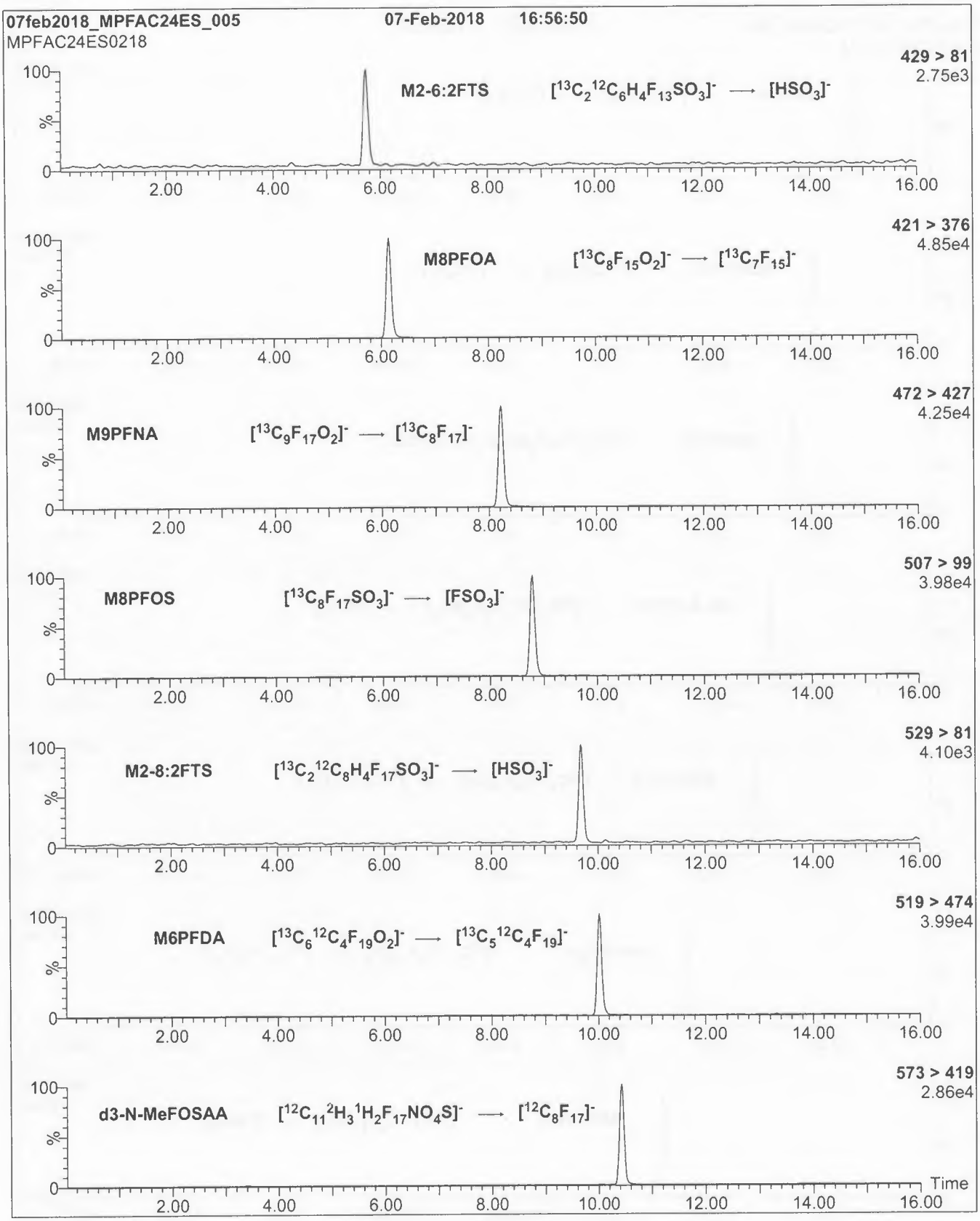
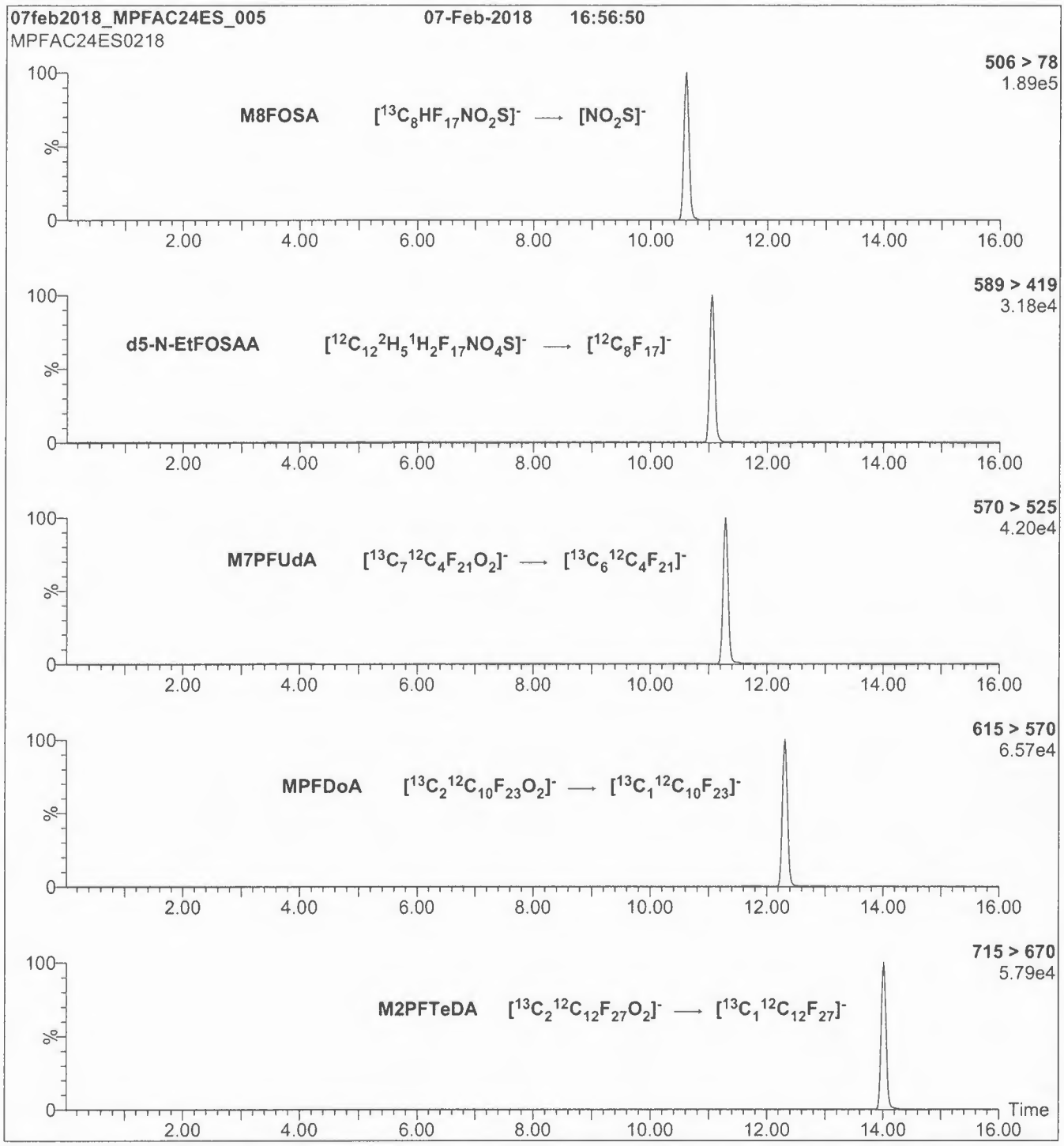


**Figure 2:** **MPFAC-24ES; LC/MS/MS Data (Selected MRM Transitions)**




**Conditions for Figure 2:**

Injection: On-column (MPFAC-24ES)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

**MS Parameters**

Collision Gas (mbar) = 3.28e-3

Collision Energy (eV) = 8-40 (variable)

# Sample Preparation

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## SAMPLE PREPARATION RECORDS

| Project Title(s) | Project No.(s) |
|---|---|
| CTO-WE21: Former Naval Air Station, Brunswick, Maine | 100122108-CTOWE21 |

**18-0520**

**CTO-WE21: Former Naval Air Station, Brunswick, Maine**

**QC**

SOP Numbers (see workplan for modifications)

ExtractionSOP No. 5-370

| This Batch Contains The Following Samples: |
|---|
| CR635PB-FS |
| CR636LCS-FS |
| J7401-FS |

Laboratory Preparation Records

COMPLETE AND VALIDATED

Prep Task Leader: Stephanie Schultz

| Approved By: | Date | Initials |
|---|---|---|
| Denise Schumitz | 08/29/2018 | DMS |

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## SAMPLE IDENTIFICATION PAGE

| **Project Title(s)** | **Project No.(s)** |
|---|---|
| CTO-WE21: Former Naval Air Station, Brunswick, Maine | 100122108-CTOWE21 |

**18-0520**

**CTO-WE21: Former Naval Air Station, Brunswick, Maine**

**QC**

| Sample ID | Description |
|---|---|
| CR635PB-FS | Procedural Blank |
| CR636LCS-FS | Laboratory Control Sample |
| J7401-FS | NASB-BLL15-GW-FB01-080918 |

Samples Assigned By: Stephanie Schultz Date : August 22, 2018

Comments:

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## SAMPLE CUSTODY LOG

**Project Title(s)**

CTO-WE21: Former Naval Air Station, Brunswick, Maine

**Project No.(s)**

100122108-CTOWE21

**18-0520**

**CTO-WE21: Former Naval Air Station, Brunswick, Maine**

**QC**

| | | | |
|---|---|---|---|
| **Requested On/By:** | 08/22/2018 SAS | **Purpose:** | Sample Preparation |
| **Relinquished On/By:** | 08/22/2018 MDS | **Last Activity:** | Transfer |

| | | | |
|---|---|---|---|
| **Accepted On/By:** | 08/22/2018 SAS | **Returned On/To:** | |
| **Stored In Facility:** | Sample Preparation | **Returned To Facility:** | |
| **Stored Until** | 08/22/2018 | | |
| **Stored Comment:** | NA | **Returned Comment:** | NA |

| No. | BDO-ID: | Ctrs | * | Condition: | Custody Comment: |
|---|---|---|---|---|---|
| 1 | J7401 | 1 | C | Consumed | NA |

**Total Samples** 1 * "C" = Consumed Container

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## LIQUID SAMPLE ID FORM

**Project Title(s)** | **Project No.(s)**

CTO-WE21: Former Naval Air Station, Brunswick, Maine | 100122108-CTOWE21

**18-0520**

**CTO-WE21: Former Naval Air Station, Brunswick, Maine**

**QC**

| Sample ID | Description | Volume (mL) | Bottles | * | Date Initials |
|---|---|---|---|---|---|
| CR635PB-FS | Procedural Blank | 250.0 | NA | -- | 08/22/18 SAS |
| CR636LCS-FS | Laboratory Control Sample | 250.0 | NA | -- | 08/22/18 SAS |
| J7401-FS | NASB-BLL15-GW-FB01-080918 | 265.0 | 1 | C | 08/22/18 SAS |

**Comments:**

Samples Assigned By Stephanie Schultz Date : August 22, 2018

* - "C" = Sample is Consumed

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## SURROGATE SPIKE FORM

**Project Title(s)**
CTO-WE21: Former Naval Air Station, Brunswick, Maine

**Project No.(s)**
100122108-CTOWE21

**18-0520**

**CTO-WE21: Former Naval Air Station, Brunswick, Maine**

**QC**

| Sample ID | Standard ID | Type | Vial No. | Vol Added (uL) | Date Spiked/ Spiked By | Witn'd By | Comment |
|---|---|---|---|---|---|---|---|
| CR635PB-FS | JY28 | SIS | 1 | 50 | 08/22/18 SAS | JCT | NA |
| CR636LCS-FS | JY28 | SIS | 1 | 50 | 08/22/18 SAS | JCT | NA |
| CR636LCS-FS | JZ27 | LCS/MS | 1 | 50 | 08/22/18 SAS | JCT | NA |
| J7401-FS | JY28 | SIS | 1 | 50 | 08/22/18 SAS | JCT | NA |

Syringes/Pipettes Used:

| Std ID | Type | Syr/Pip |
|---|---|---|
| JY28 | Pipette | B814659662 |
| JZ27 | Pipette | B814659662 |

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## SAMPLE EXTRACTION FORM

**Project Title(s)** **Project No.(s)**

CTO-WE21: Former Naval Air Station, Brunswick, Maine 100122108-CTOWE21

**18-0520**

**CTO-WE21: Former Naval Air Station, Brunswick, Maine**

**QC**

| Sample ID | 1st Extraction | 2nd Extraction | 3rd Extraction | Conc. ID | Turbo °C | Turbo PSI | KD °C | Comment |
|---|---|---|---|---|---|---|---|---|
| CR635PB-FS | 08/22/18 SAS | NA | NA | NA | NA | NA | NA | NA |
| CR636LCS-FS | 08/22/18 SAS | NA | NA | NA | NA | NA | NA | NA |
| J7401-FS | 08/22/18 SAS | NA | NA | NA | NA | NA | NA | NA |

**Solvents/Reagent Preparations:**

| Name | ID | Expires | Lot No | Procedure | Comments |
|---|---|---|---|---|---|
| 0.4% NH3 in Methanol | RP-180822-3 | 08/22/18 | 181704 | Per 100 mL, 3.5 mL ammonia solution brought to 100 mL with methanol | |
| 0.4% NH3 in Methanol | RP-180822-3 | 08/22/18 | SHBJ0412 | Per 100 mL, 3.5 mL ammonia solution brought to 100 mL with methanol | |
| Pre-packed SPE Column | RP-180822-4 | 08/22/18 | 003537220A | Pre-packed SPE Column | |

**Solvents/Reagents:**

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## INTERNAL STANDARD SPIKING FORM

**Project Title(s)**
CTO-WE21: Former Naval Air Station, Brunswick, Maine

**Project No.(s)**
100122108-CTOWE21

**18-0520**

**CTO-WE21: Former Naval Air Station, Brunswick, Maine**

**QC**

**(N/A Fraction)**

| Extract Id | Extr. Vol. (uL) | Added (uL) | Std. Id | Accm. (uL) | Vial No. | Pre Inj. Vol. (uL)^ | Final Dilution * | Date Spiked/ Spiked By | Witn'd By |
|---|---|---|---|---|---|---|---|---|---|
| CR635PB-FS(3) | 475 | 25 | JY26 | 25 | 1 | 500 | 2.000 | 08/23/18 SAS | MRM |
| CR636LCS-FS(3) | 475 | 25 | JY26 | 25 | 1 | 500 | 2.000 | 08/23/18 SAS | MRM |
| J7401-FS(3) | 475 | 25 | JY26 | 25 | 1 | 500 | 2.000 | 08/23/18 SAS | MRM |

Syringes/Pipettes Used:

| Std ID | Type | Syr/Pip |
|---|---|---|
| JY26 | Pipette | B814659662 |

* - Final Dilution is any HPLC, dilutions, or other manipulation

^ - Pre Injection Volume (PIV) includes any RIS spikes.

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## PREPARATION EXTRACT SPLIT FORM

**Project Title(s)**
CTO-WE21: Former Naval Air Station, Brunswick, Maine

**Project No.(s)**
100122108-CTOWE21

**18-0520**

**CTO-WE21: Former Naval Air Station, Brunswick, Maine**

**QC**

| Extract | | * | Extract Date | Source | | Initial Extract Vol (uL) | Extract Split | Extract Split | Total Dilution | Date/Initials |
|---|---|---|---|---|---|---|---|---|---|---|
| Name | # | | | Name | # | | | | | |
| CR635PB-FS | 0 | C | 8/22/2018 2:47:00 PM | NA | | NA | NA | 1.000 | 1.000 | 08/22/18 SAS |
| CR635PB-FS | 2 | -- | 8/23/2018 11:49:00 AM | CR635PB-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/23/18 SAS |
| CR635PB-FS | 3 | -- | 8/23/2018 11:49:00 AM | CR635PB-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/23/18 SAS |
| CR636LCS-FS | 0 | C | 8/22/2018 2:47:00 PM | NA | | NA | NA | 1.000 | 1.000 | 08/22/18 SAS |
| CR636LCS-FS | 2 | -- | 8/23/2018 11:49:00 AM | CR636LCS-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/23/18 SAS |
| CR636LCS-FS | 3 | -- | 8/23/2018 11:49:00 AM | CR636LCS-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/23/18 SAS |
| J7401-FS | 0 | C | 8/22/2018 2:47:00 PM | NA | | NA | NA | 1.000 | 1.000 | 08/22/18 SAS |
| J7401-FS | 2 | -- | 8/23/2018 11:49:00 AM | J7401-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/23/18 SAS |
| J7401-FS | 3 | -- | 8/23/2018 11:49:00 AM | J7401-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/23/18 SAS |

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## EXTRACT - INSTRUMENT FACILITY CUSTODY PAGE

**Project Title(s)**

CTO-WE21: Former Naval Air Station, Brunswick, Maine

**Project No.(s)**

100122108-CTOWE21

**18-0520**

**CTO-WE21: Former Naval Air Station, Brunswick, Maine**

**QC**

| | | | |
|---|---|---|---|
| **Purpose:** | LC-MS/MS TRANSFER | **Last Activity:** | Prep->Inst |
| **Relinquished On/By:** | Aug 24 2018 1:49PM SAS | **Received On/By:** | Aug 24 2018 1:50PM DMS |
| **Relinquished From:** | Sample Preparation: NA | **Received Location:** | LC Laboratory: NA |
| **Relinquish Comment:** | NA | **Received Comment:** | NA |

| No. | BDO-ID: | PIV: | DF: | Condition: | Custody Comment: |
|---|---|---|---|---|---|
| 1 | CR635PB-FS(3) | 500 | 2 | Intact | NA |
| 2 | CR636LCS-FS(3) | 500 | 2 | Intact | NA |
| 3 | J7401-FS(3) | 500 | 2 | Intact | NA |

**Total Extracts:** 3

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## SAMPLE SPECIFIC COMMENTS

**Project Title(s)**

CTO-WE21: Former Naval Air Station, Brunswick, Maine

**Project No.(s)**

100122108-CTOWE21

**18-0520**

**CTO-WE21: Former Naval Air Station, Brunswick, Maine**

**QC**

| Sample ID: | Comment: | Date/Initials: |
|---|---|---|
| CR635PB-FS | Extraction for all samples began at 2:47pm | 08/22/18 SAS |
| CR635PB-FS | Sample extraction ended at 3:39pm | 08/22/18 SAS |
| CR636LCS-FS | Sample extraction ended at 3:37pm | 08/22/18 SAS |
| J7401-FS | Sample extraction ended at 3:49pm | 08/22/18 SAS |

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## MISCELLANEOUS DOCUMENTATION FORM

| Project Title(s) | Project No.(s) |
|---|---|
| CTO-WE21: Former Naval Air Station, Brunswick, Maine | 100122108-CTOWE21 |

**18-0520**

**CTO-WE21: Former Naval Air Station, Brunswick, Maine**

**QC**

| | |
|---|---|
| Entered By: | On: |

| | |
|---|---|
| Task Leader Approval: | On: |
| SupervisorApproval: | On: |
| PM Approval: | On: |

# Analytical Calibrations

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 29/08/2018 2:10:09 PM

| Vial | Laboratory Sample ID | Client Sample ID | Acquisition Date | Acquisition Method | Data File |
|---|---|---|---|---|---|
| 1 | MEOH | | 8/24/2018 10:26:02 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 2 | JY38 | L1 | 8/24/2018 10:36:54 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 3 | JY39 | L2 | 8/24/2018 10:47:47 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 4 | JY40 | L3 | 8/24/2018 10:58:41 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 5 | JY41 | L4 | 8/24/2018 11:09:34 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 6 | JY42 | L5 | 8/24/2018 11:20:26 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 7 | JY43 | L6 | 8/24/2018 11:31:18 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 8 | JY44 | L7 | 8/24/2018 11:42:11 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 9 | JY46 IB | Instrument Blank | 8/24/2018 11:53:03 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 10 | JY45 ICC | ICC | 8/25/2018 12:03:55 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 11 | JX29 BRANCH | Branch Standard | 8/25/2018 12:14:48 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 14 | MEOH | | 8/25/2018 12:58:20 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 15 | CR635PB-FS(3) | Procedural Blank | 8/25/2018 1:09:11 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 16 | CR636LCS-FS(3) | Laboratory Control Sample | 8/25/2018 1:20:03 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 17 | J7401-FS(3) | NASB-BLL15-GW-FB01-080918 | 8/25/2018 1:30:55 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 18 | JY41 CCV | CCV | 8/25/2018 1:41:46 AM | 5-0369.dam | 18-0501-515-520-500.wiff |

BATTELLE

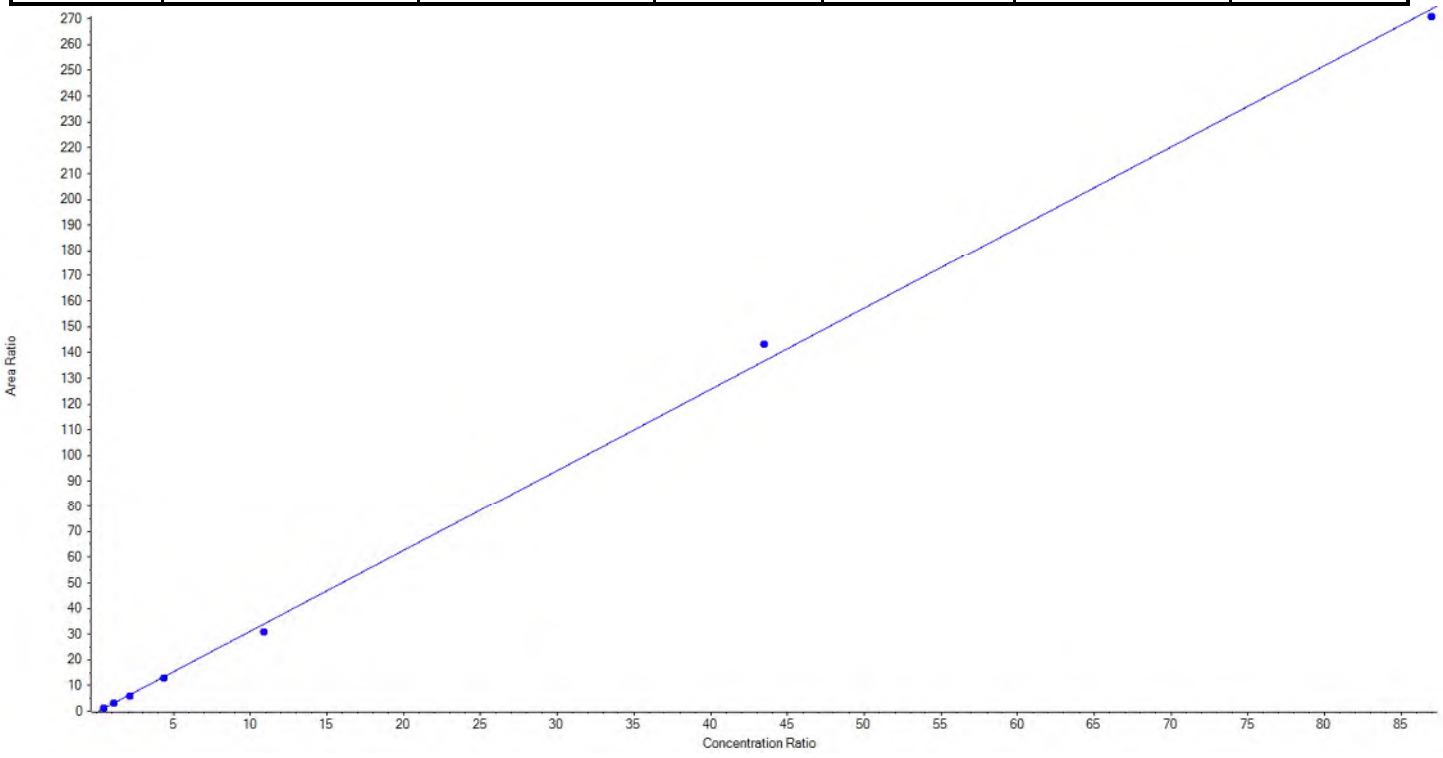
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFBS_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 298.9 / 80.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C3-PFBS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 3.15281 x + -0.41358 (r = 0.99916) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 101.00 | 118.174563 | 117.0 |
| 3 | JY39 | L2 | True | 252.50 | 254.441490 | 100.8 |
| 4 | JY40 | L3 | True | 505.00 | 456.707111 | 90.4 |
| 5 | JY41 | L4 | True | 1010.00 | 973.620829 | 96.4 |
| 6 | JY42 | L5 | True | 2525.00 | 2311.981236 | 91.6 |
| 7 | JY43 | L6 | True | 10100.00 | 10594.642449 | 104.9 |
| 8 | JY44 | L7 | True | 20200.00 | 19983.932322 | 98.9 |



BATTELLE

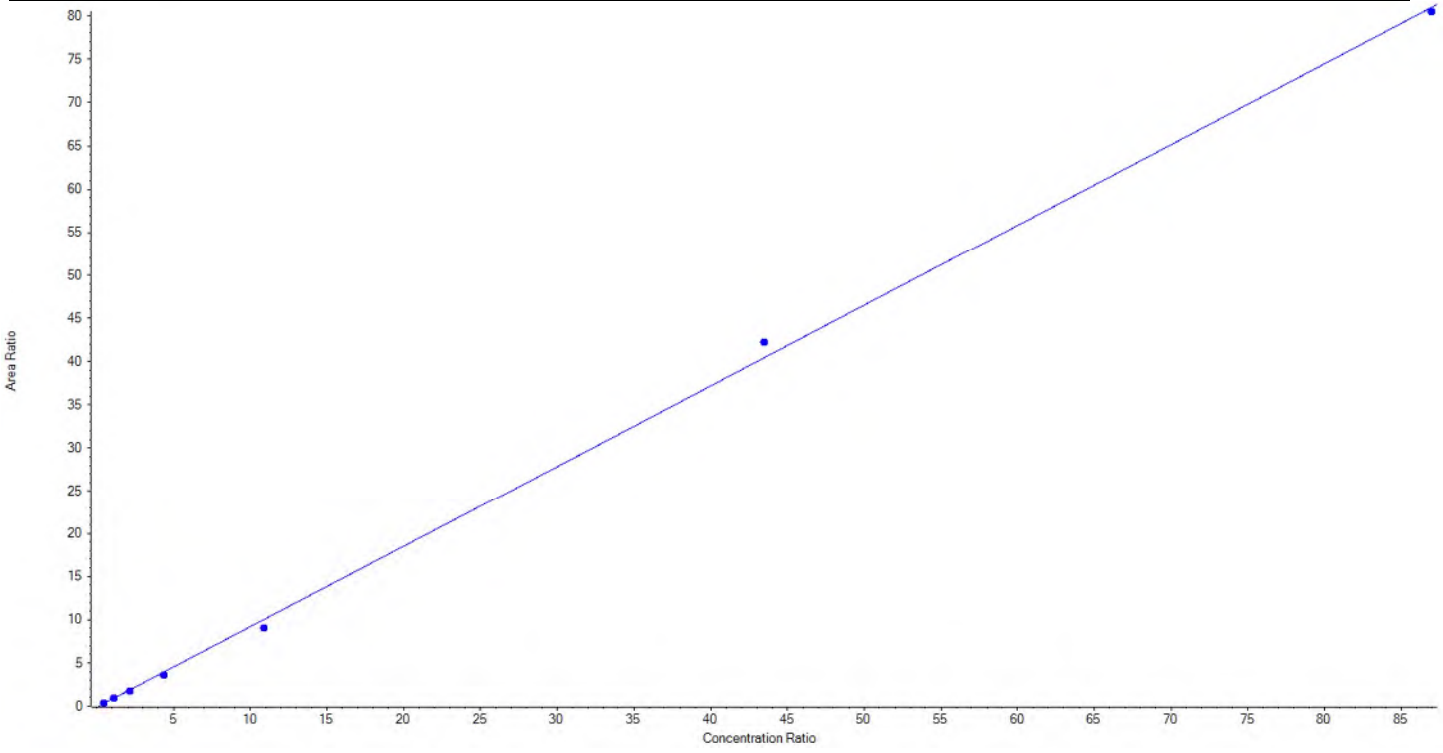
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFBS_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 298.9 / 99.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C3-PFBS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.93255 x + -0.12994 (r = 0.99907) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 101.00 | 124.006251 | 122.8 |
| 3 | JY39 | L2 | True | 252.50 | 251.390877 | 99.6 |
| 4 | JY40 | L3 | True | 505.00 | 457.925956 | 90.7 |
| 5 | JY41 | L4 | True | 1010.00 | 933.624261 | 92.4 |
| 6 | JY42 | L5 | True | 2525.00 | 2287.352093 | 90.6 |
| 7 | JY43 | L6 | True | 10100.00 | 10559.938920 | 104.6 |
| 8 | JY44 | L7 | True | 20200.00 | 20079.261643 | 99.4 |



BATTELLE

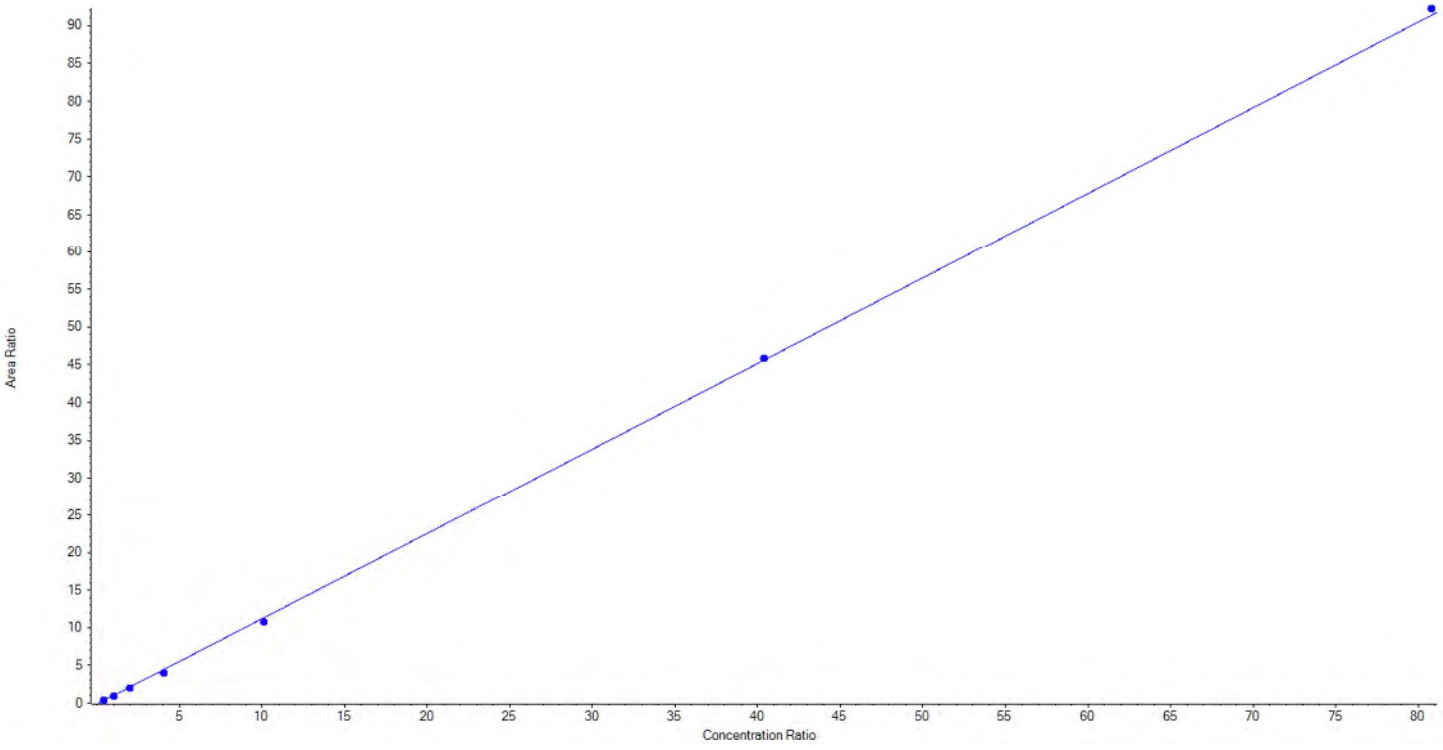
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHxA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 313.0 / 269.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C5-PFHxA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.13247 x + -0.13932 (r = 0.99960) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 101.00 | 125.508479 | 124.3 |
| 3 | JY39 | L2 | True | 252.50 | 243.109429 | 96.3 |
| 4 | JY40 | L3 | True | 505.00 | 464.496945 | 92.0 |
| 5 | JY41 | L4 | True | 1010.00 | 916.327219 | 90.7 |
| 6 | JY42 | L5 | True | 2525.00 | 2407.633843 | 95.4 |
| 7 | JY43 | L6 | True | 10100.00 | 10145.632957 | 100.5 |
| 8 | JY44 | L7 | True | 20200.00 | 20390.791129 | 100.9 |



BATTELLE

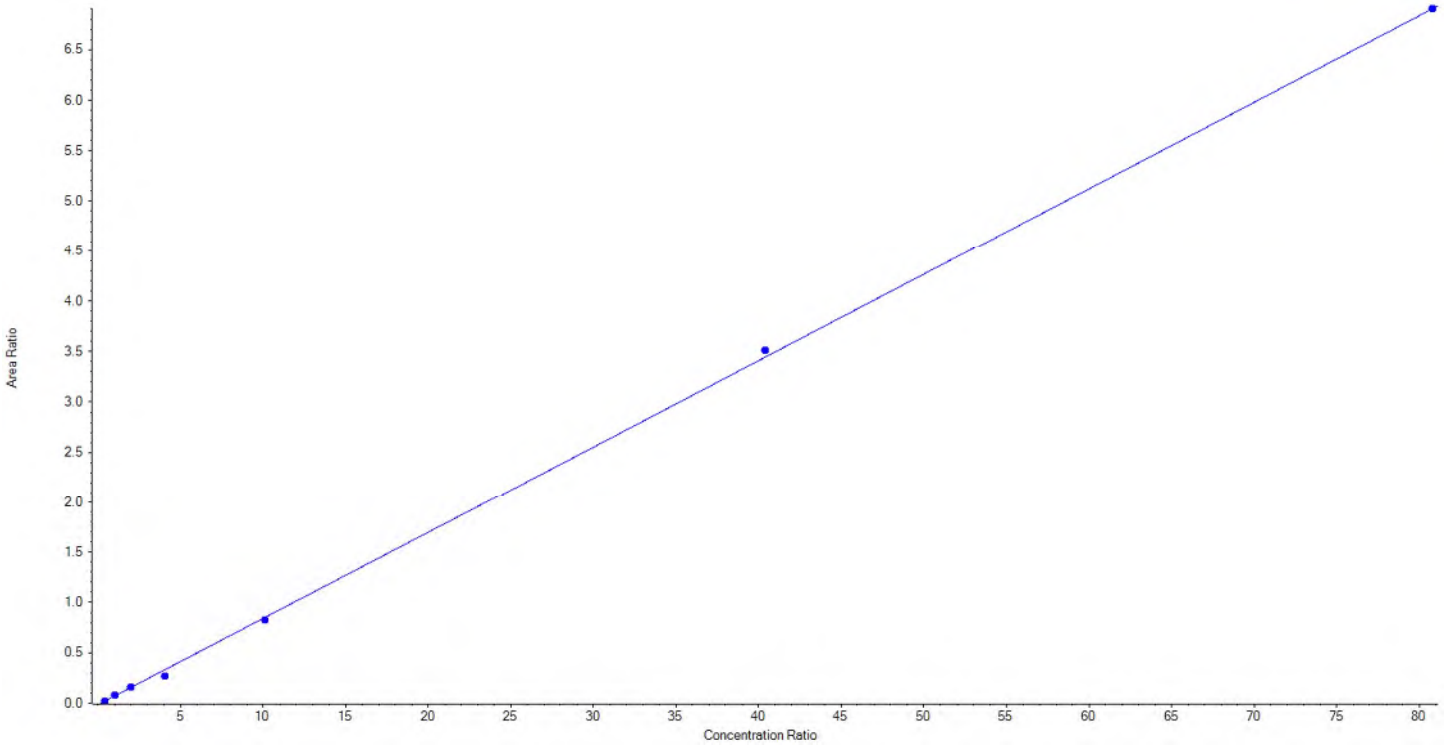
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHxA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 313.0 / 119.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C5-PFHxA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.08563 x + -0.01582 (r = 0.99943) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 101.00 | 109.463725 | 108.4 |
| 3 | JY39 | L2 | True | 252.50 | 269.034709 | 106.6 |
| 4 | JY40 | L3 | True | 505.00 | 518.403953 | 102.7 |
| 5 | JY41 | L4 | True | 1010.00 | 839.466188 | 83.1 |
| 6 | JY42 | L5 | True | 2525.00 | 2458.325809 | 97.4 |
| 7 | JY43 | L6 | True | 10100.00 | 10293.584410 | 101.9 |
| 8 | JY44 | L7 | True | 20200.00 | 20205.221206 | 100.0 |



BATTELLE

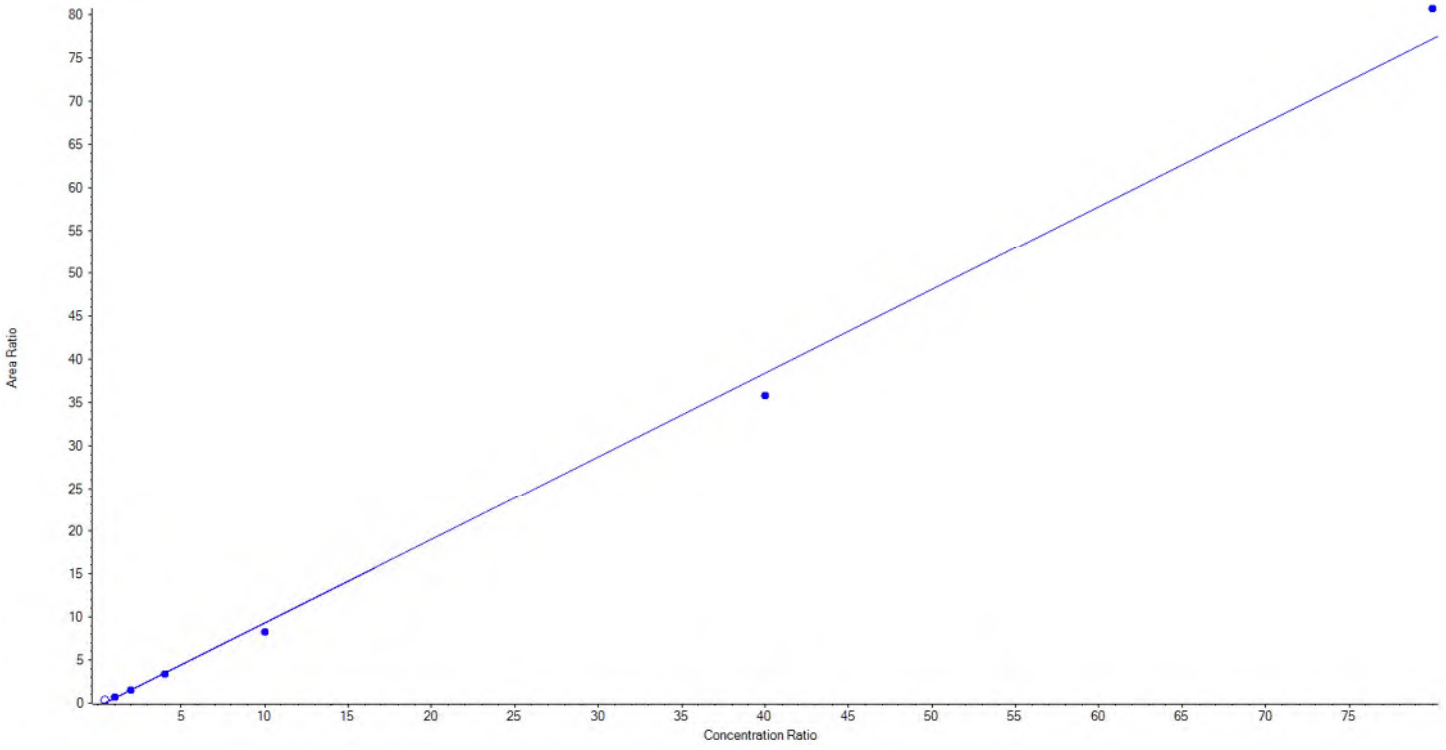
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHpA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 363.0 / 319.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C8-PFOA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.96991 x + -0.40464 (r = 0.99800) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | False | 100.00 | 182.558218 | 182.6 |
| 3 | JY39 | L2 | True | 250.00 | 289.794362 | 115.9 |
| 4 | JY40 | L3 | True | 500.00 | 491.393934 | 98.3 |
| 5 | JY41 | L4 | True | 1000.00 | 980.976708 | 98.1 |
| 6 | JY42 | L5 | True | 2500.00 | 2245.594351 | 89.8 |
| 7 | JY43 | L6 | True | 10000.00 | 9334.164109 | 93.3 |
| 8 | JY44 | L7 | True | 20000.00 | 20908.076537 | 104.5 |



BATTELLE

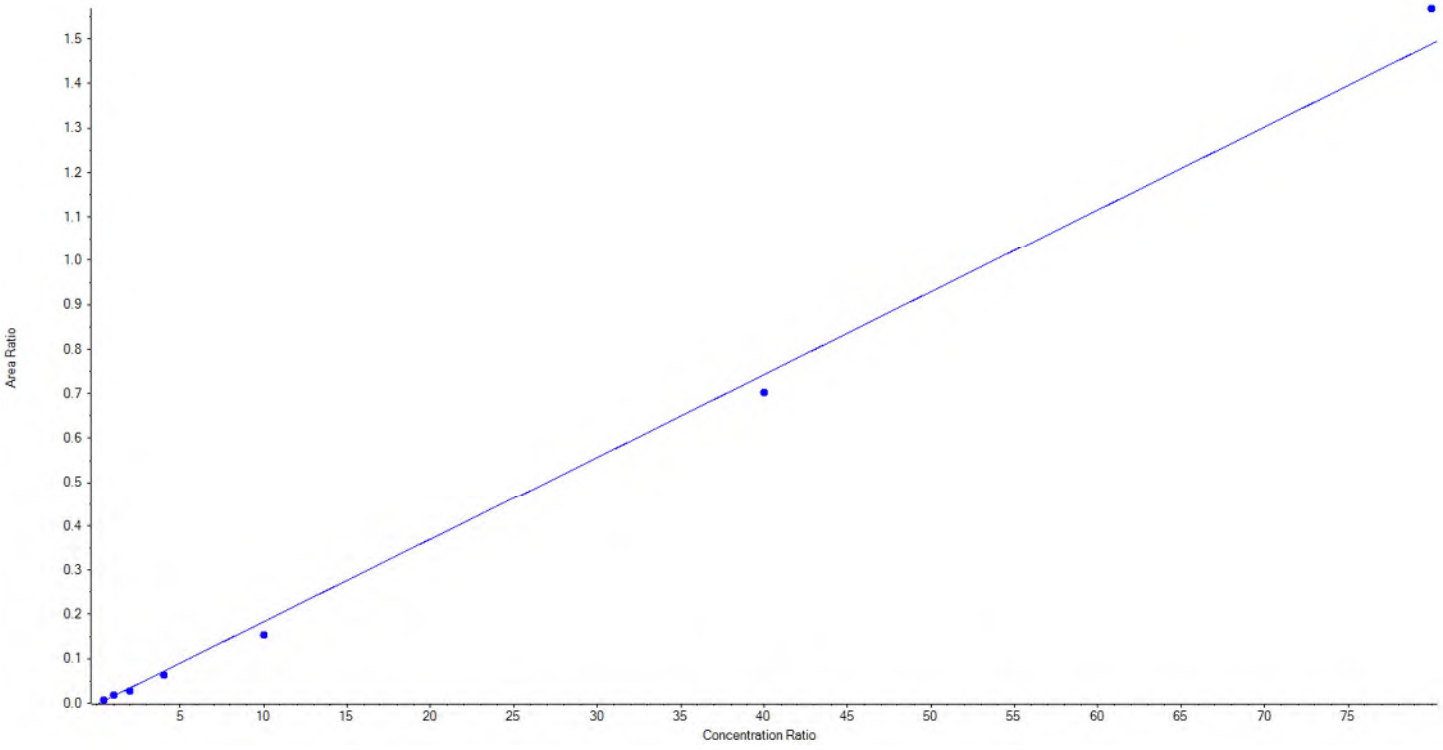
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHpA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 363.0 / 169.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C8-PFOA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.01865 x + -0.00294 (r = 0.99699) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 126.607387 | 126.6 |
| 3 | JY39 | L2 | True | 250.00 | 291.760656 | 116.7 |
| 4 | JY40 | L3 | True | 500.00 | 417.285946 | 83.5 |
| 5 | JY41 | L4 | True | 1000.00 | 896.485634 | 89.7 |
| 6 | JY42 | L5 | True | 2500.00 | 2090.680566 | 83.6 |
| 7 | JY43 | L6 | True | 10000.00 | 9463.895250 | 94.6 |
| 8 | JY44 | L7 | True | 20000.00 | 21063.284561 | 105.3 |



BATTELLE

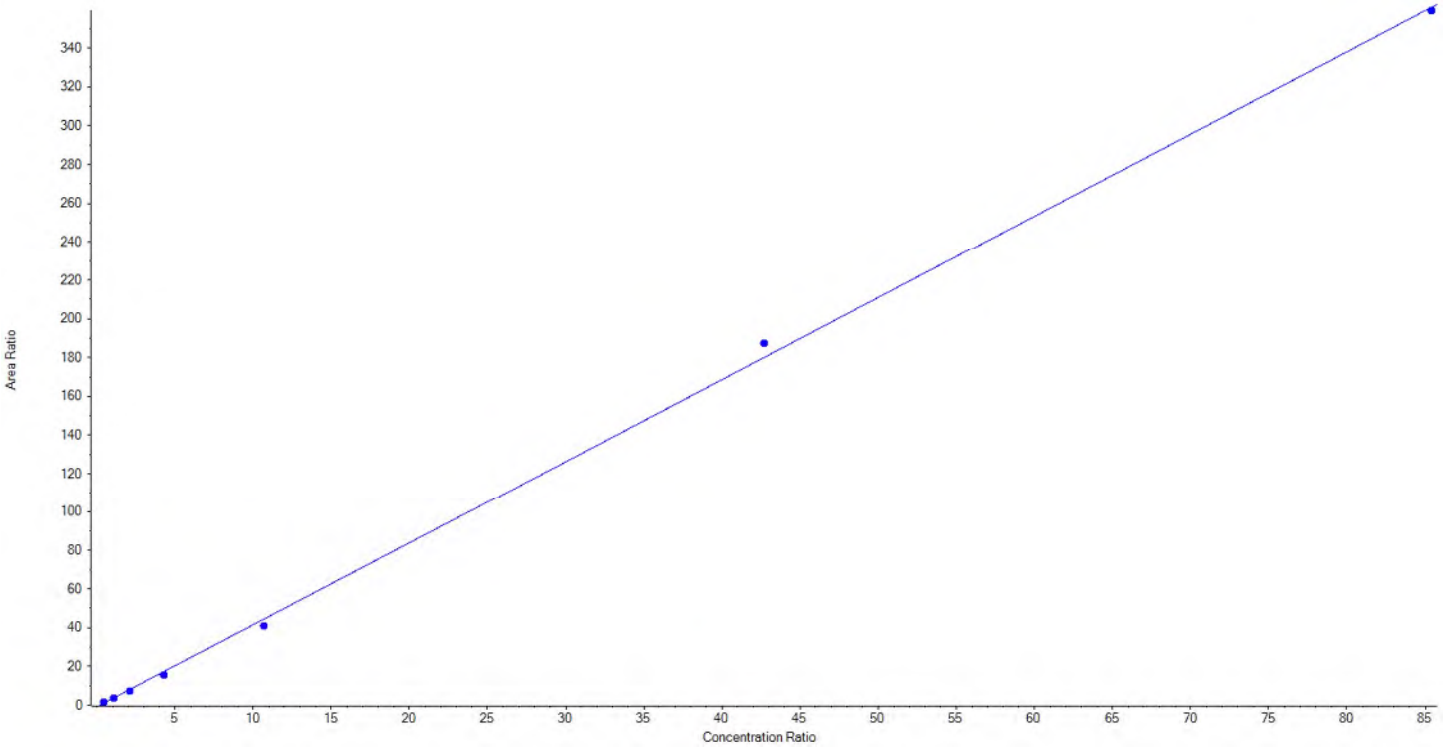
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHxS_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 399.0 / 80.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C3-PFHxS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 4.23537 x + -0.84536 (r = 0.99917) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 101.00 | 126.099371 | 124.9 |
| 3 | JY39 | L2 | True | 252.50 | 246.750083 | 97.7 |
| 4 | JY40 | L3 | True | 505.00 | 455.053362 | 90.1 |
| 5 | JY41 | L4 | True | 1010.00 | 928.278420 | 91.9 |
| 6 | JY42 | L5 | True | 2525.00 | 2316.855490 | 91.8 |
| 7 | JY43 | L6 | True | 10100.00 | 10517.109004 | 104.1 |
| 8 | JY44 | L7 | True | 20200.00 | 20103.354269 | 99.5 |



BATTELLE

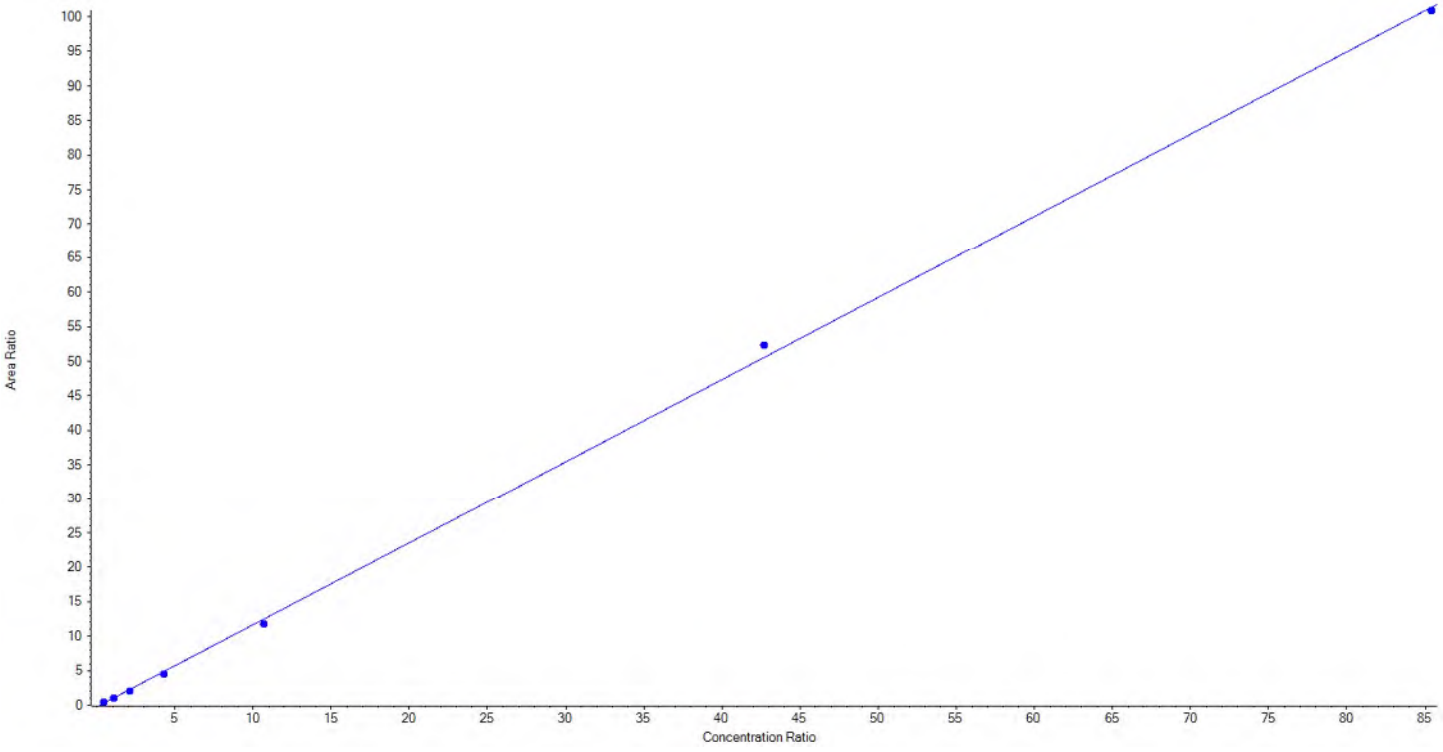
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHxS_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 399.0 / 99.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C3-PFHxS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.18953 x + -0.23223 (r = 0.99941) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 101.00 | 125.405816 | 124.2 |
| 3 | JY39 | L2 | True | 252.50 | 238.832101 | 94.6 |
| 4 | JY40 | L3 | True | 505.00 | 462.800440 | 91.6 |
| 5 | JY41 | L4 | True | 1010.00 | 934.199524 | 92.5 |
| 6 | JY42 | L5 | True | 2525.00 | 2375.949764 | 94.1 |
| 7 | JY43 | L6 | True | 10100.00 | 10452.350229 | 103.5 |
| 8 | JY44 | L7 | True | 20200.00 | 20103.962127 | 99.5 |



BATTELLE

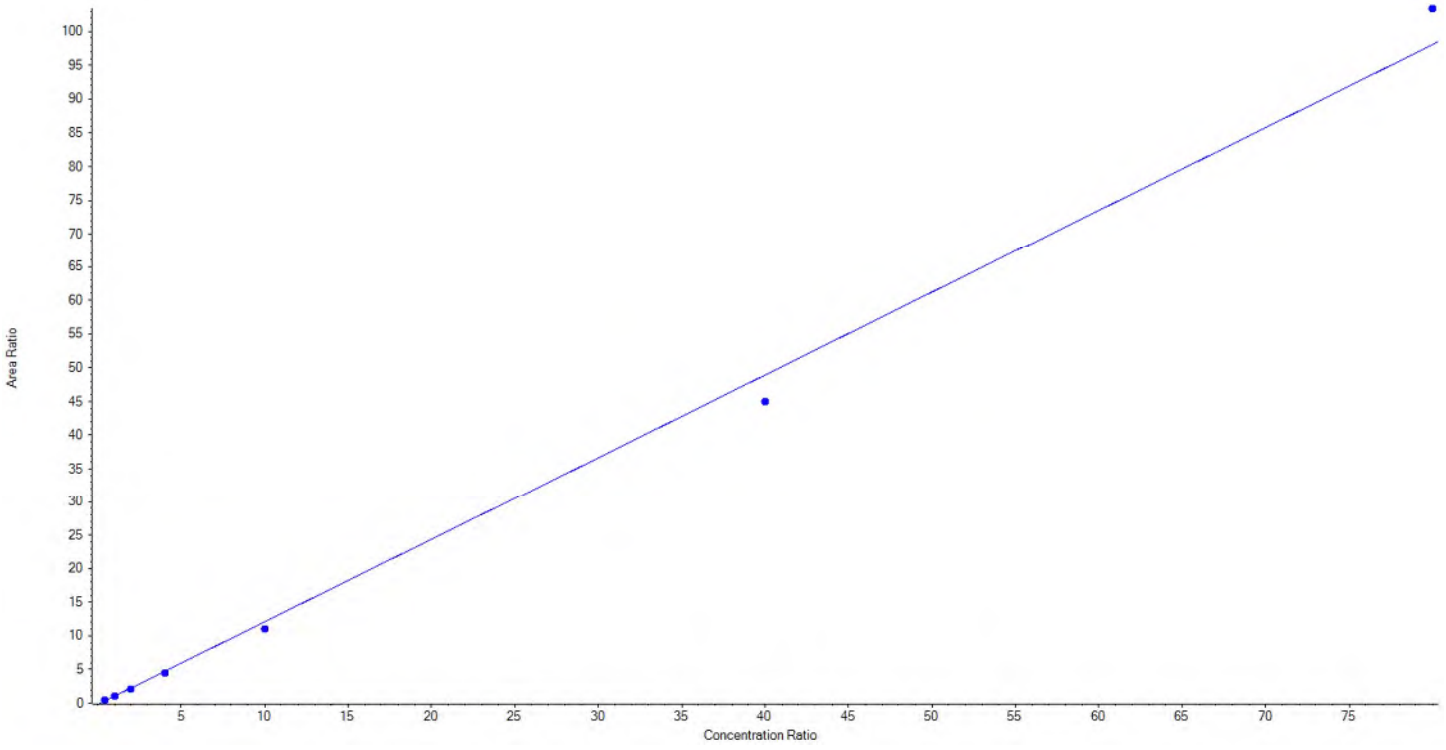
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFOA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 413.0 / 369.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C8-PFOA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.22810 x + -0.19423 (r = 0.99758) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 123.488647 | 123.5 |
| 3 | JY39 | L2 | True | 250.00 | 251.671145 | 100.7 |
| 4 | JY40 | L3 | True | 500.00 | 458.269834 | 91.7 |
| 5 | JY41 | L4 | True | 1000.00 | 955.748778 | 95.6 |
| 6 | JY42 | L5 | True | 2500.00 | 2280.876737 | 91.2 |
| 7 | JY43 | L6 | True | 10000.00 | 9195.851434 | 92.0 |
| 8 | JY44 | L7 | True | 20000.00 | 21084.093425 | 105.4 |



BATTELLE

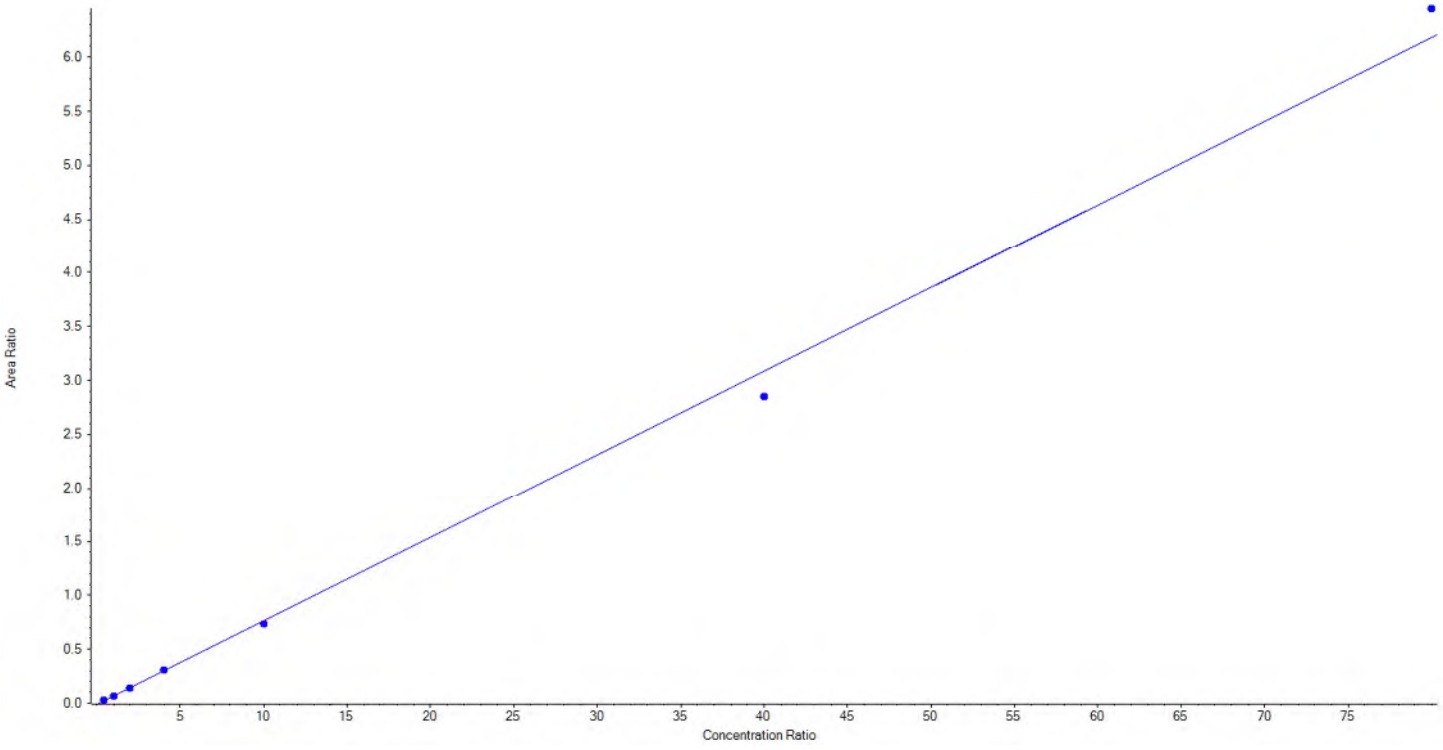
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFOA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 413.0 / 169.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C8-PFOA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.07739 x + -0.01016 (r = 0.99838) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 115.526510 | 115.5 |
| 3 | JY39 | L2 | True | 250.00 | 236.072750 | 94.4 |
| 4 | JY40 | L3 | True | 500.00 | 478.820620 | 95.8 |
| 5 | JY41 | L4 | True | 1000.00 | 1009.636830 | 101.0 |
| 6 | JY42 | L5 | True | 2500.00 | 2417.165222 | 96.7 |
| 7 | JY43 | L6 | True | 10000.00 | 9233.216753 | 92.3 |
| 8 | JY44 | L7 | True | 20000.00 | 20859.561314 | 104.3 |



BATTELLE

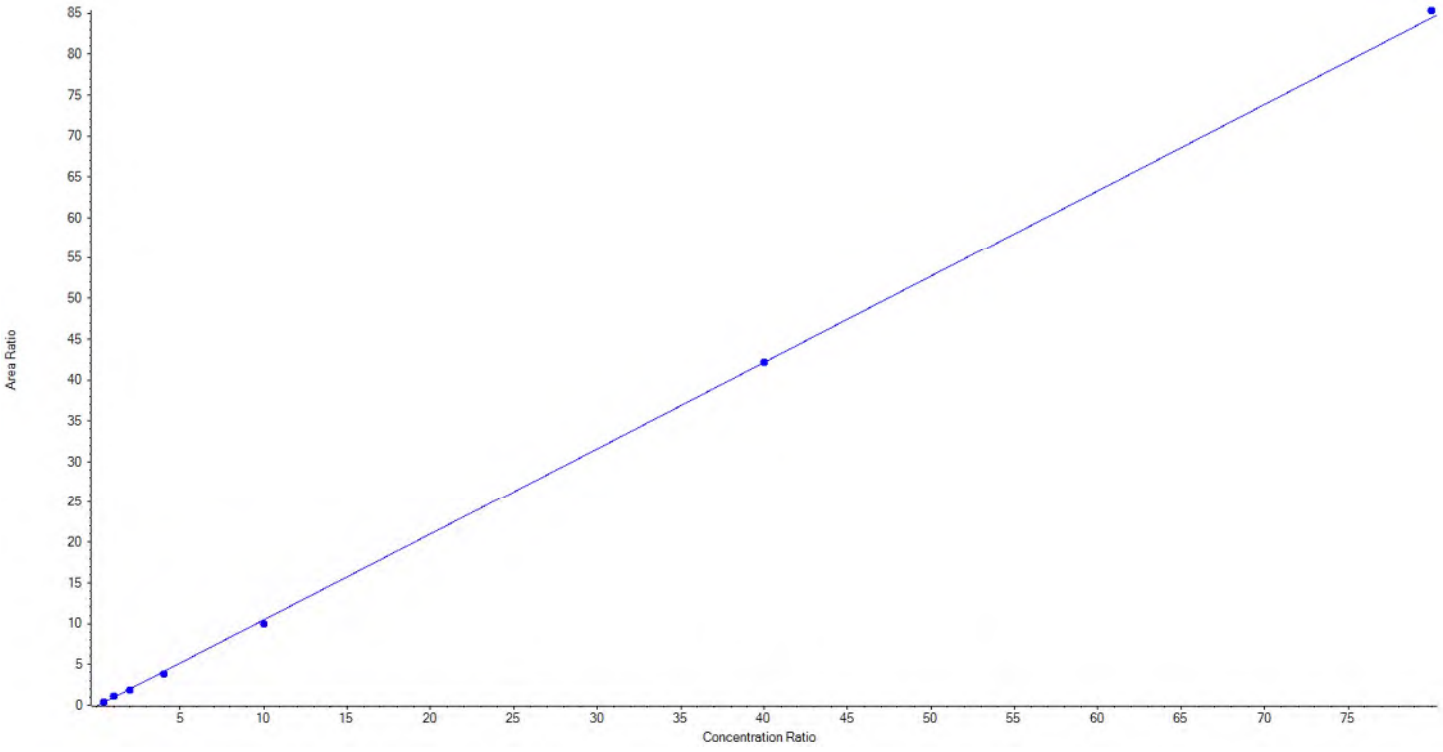
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFNA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 463.0 / 419.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C9-PFNA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.05685 x + -0.11971 (r = 0.99968) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 107.015449 | 107.0 |
| 3 | JY39 | L2 | True | 250.00 | 278.560077 | 111.4 |
| 4 | JY40 | L3 | True | 500.00 | 464.832649 | 93.0 |
| 5 | JY41 | L4 | True | 1000.00 | 927.907689 | 92.8 |
| 6 | JY42 | L5 | True | 2500.00 | 2371.276802 | 94.9 |
| 7 | JY43 | L6 | True | 10000.00 | 9990.022487 | 99.9 |
| 8 | JY44 | L7 | True | 20000.00 | 20210.384848 | 101.1 |



BATTELLE

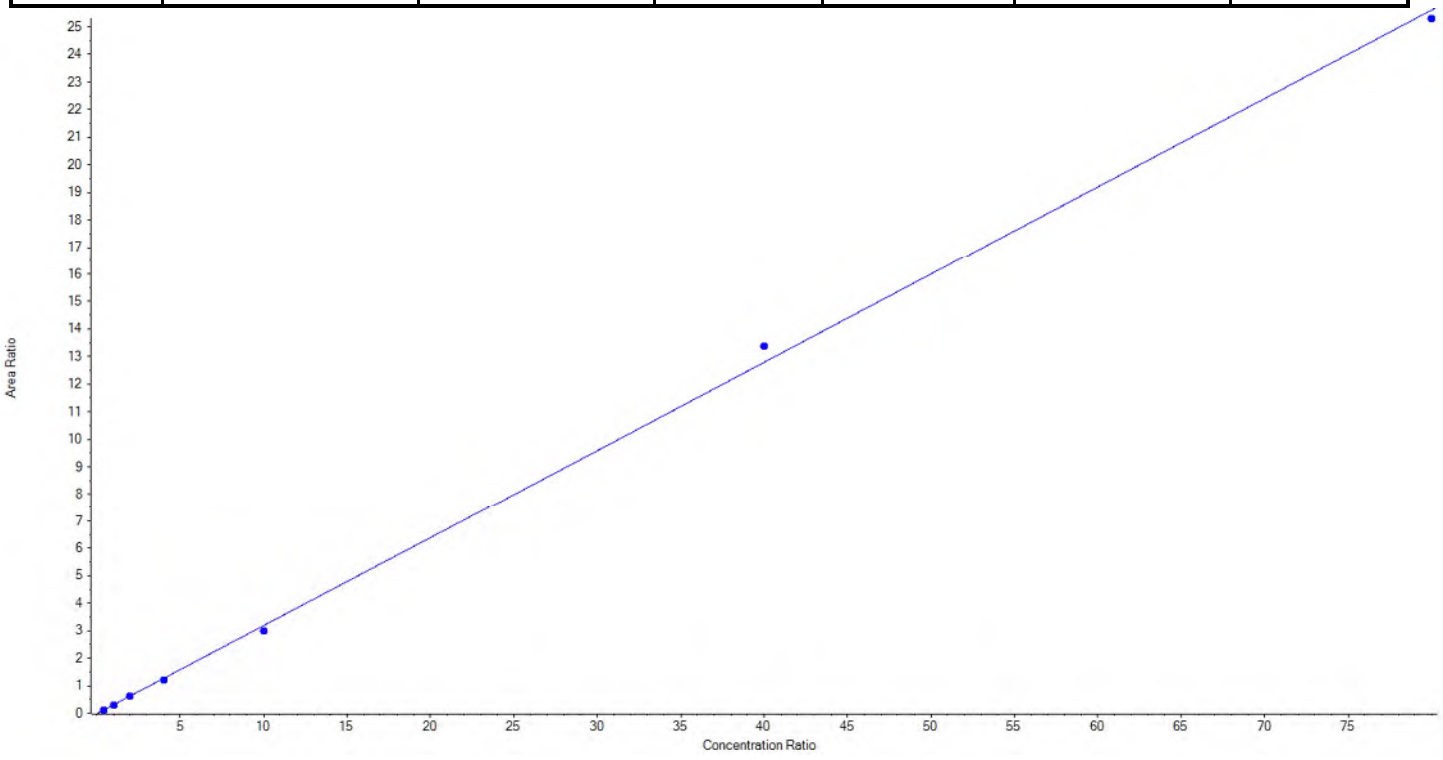
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFNA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 463.0 / 219.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C9-PFNA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.32026 x + -0.01897 (r = 0.99944) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 107.867314 | 107.9 |
| 3 | JY39 | L2 | True | 250.00 | 253.733268 | 101.5 |
| 4 | JY40 | L3 | True | 500.00 | 495.088887 | 99.0 |
| 5 | JY41 | L4 | True | 1000.00 | 944.716102 | 94.5 |
| 6 | JY42 | L5 | True | 2500.00 | 2348.525773 | 93.9 |
| 7 | JY43 | L6 | True | 10000.00 | 10441.723314 | 104.4 |
| 8 | JY44 | L7 | True | 20000.00 | 19758.345342 | 98.8 |



BATTELLE

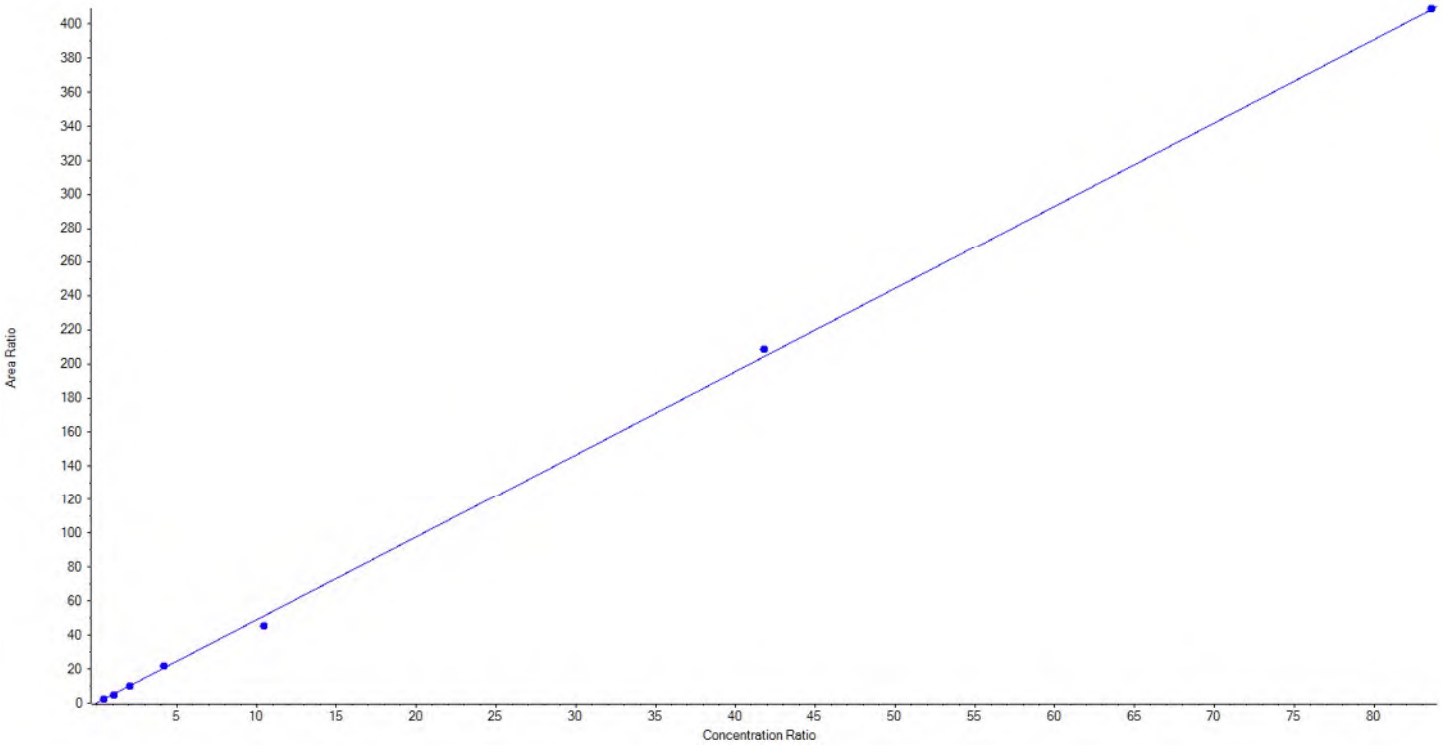
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFOS_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 499.0 / 80.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C8-PFOS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 4.88434 x + 0.09297 (r = 0.99923) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 113.148143 | 113.2 |
| 3 | JY39 | L2 | True | 250.00 | 233.073775 | 93.2 |
| 4 | JY40 | L3 | True | 500.00 | 479.111009 | 95.8 |
| 5 | JY41 | L4 | True | 1000.00 | 1072.470671 | 107.3 |
| 6 | JY42 | L5 | True | 2500.00 | 2205.334880 | 88.2 |
| 7 | JY43 | L6 | True | 10000.00 | 10221.075140 | 102.2 |
| 8 | JY44 | L7 | True | 20000.00 | 20025.786383 | 100.1 |



BATTELLE

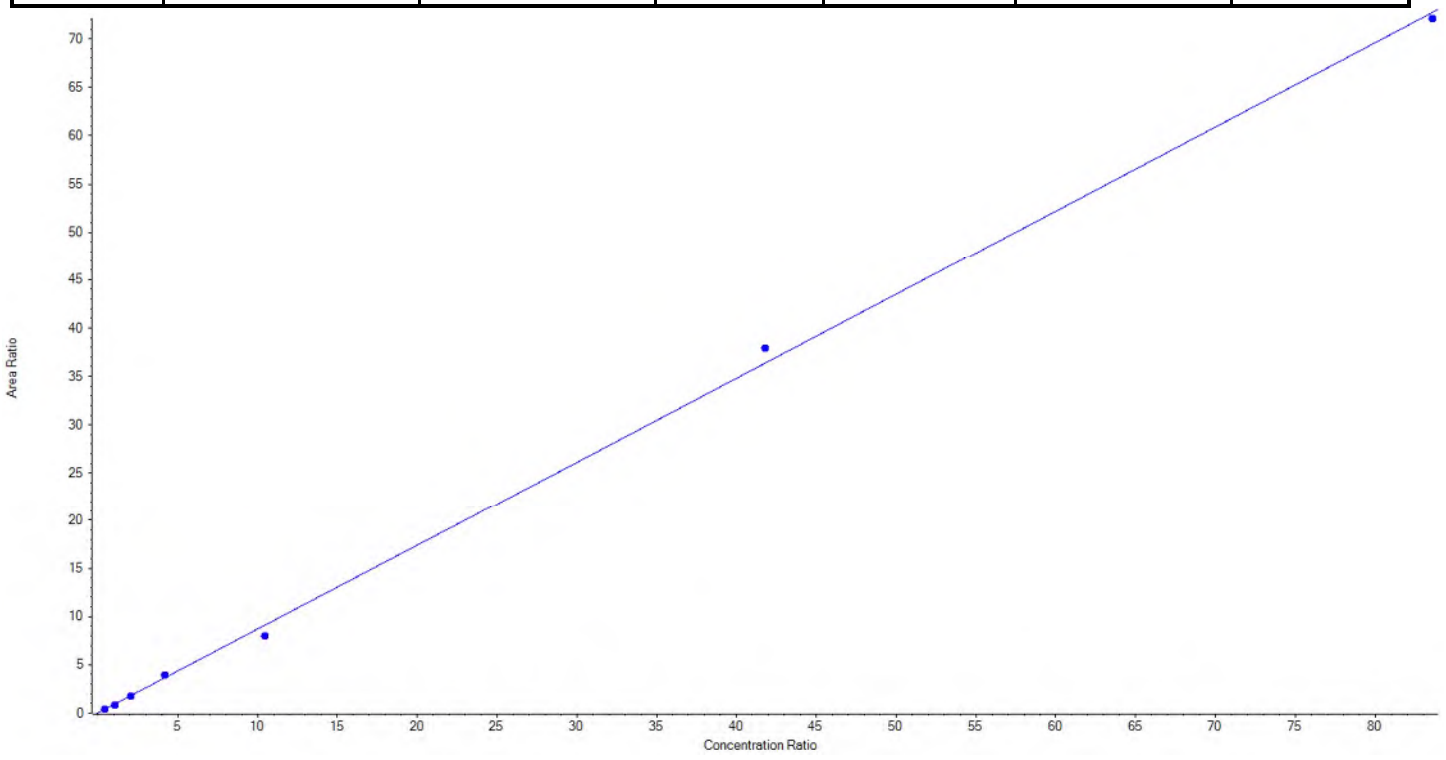
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFOS_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 499.0 / 99.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C8-PFOS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.86986 x + 0.01336 (r = 0.99881) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 117.347383 | 117.4 |
| 3 | JY39 | L2 | True | 250.00 | 217.248927 | 86.9 |
| 4 | JY40 | L3 | True | 500.00 | 477.582506 | 95.5 |
| 5 | JY41 | L4 | True | 1000.00 | 1091.956540 | 109.2 |
| 6 | JY42 | L5 | True | 2500.00 | 2190.256613 | 87.6 |
| 7 | JY43 | L6 | True | 10000.00 | 10430.517196 | 104.3 |
| 8 | JY44 | L7 | True | 20000.00 | 19825.090835 | 99.1 |



BATTELLE

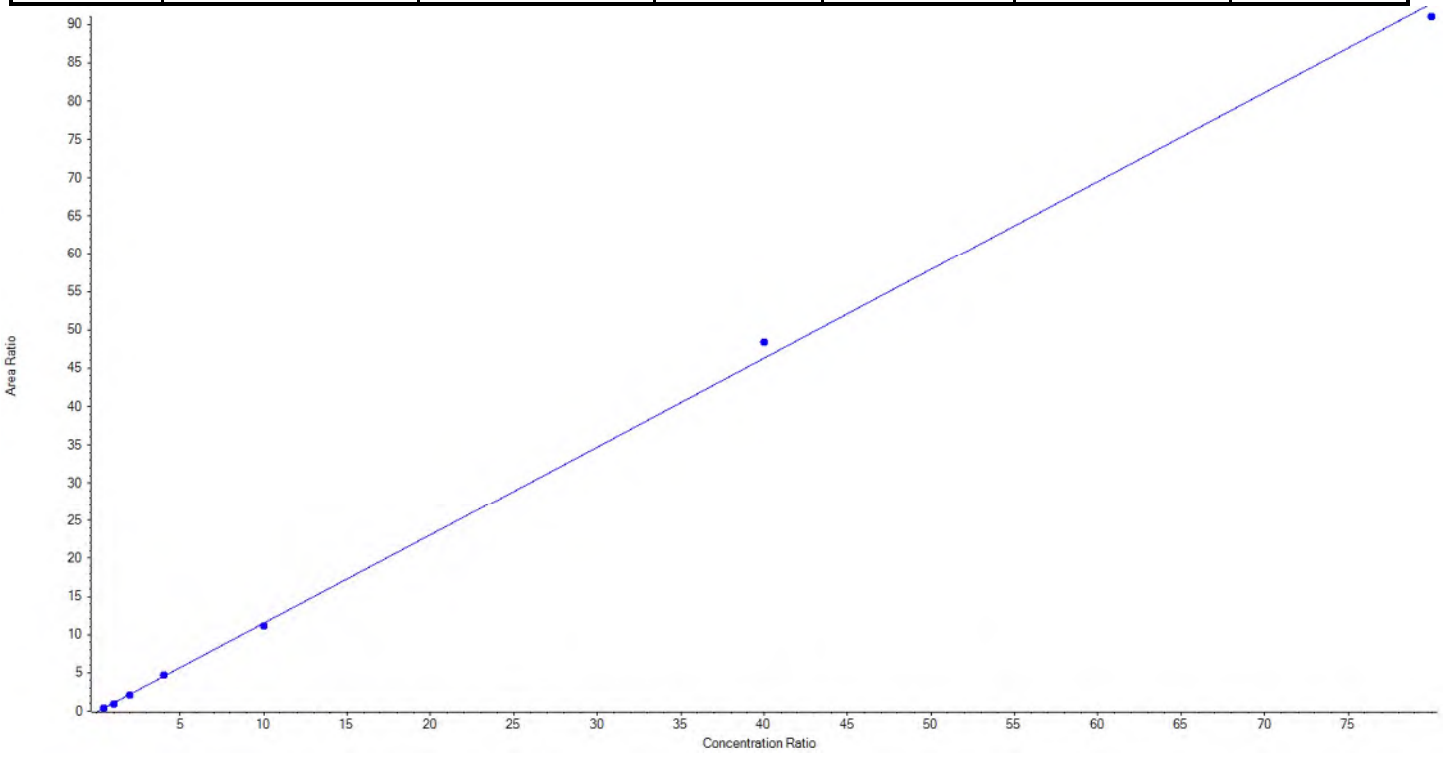
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFDA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 513.0 / 469.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C6-PFDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.16034 x + -0.10710 (r = 0.99947) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 110.198423 | 110.2 |
| 3 | JY39 | L2 | True | 250.00 | 231.107869 | 92.4 |
| 4 | JY40 | L3 | True | 500.00 | 470.043896 | 94.0 |
| 5 | JY41 | L4 | True | 1000.00 | 1035.018294 | 103.5 |
| 6 | JY42 | L5 | True | 2500.00 | 2432.445932 | 97.3 |
| 7 | JY43 | L6 | True | 10000.00 | 10438.811237 | 104.4 |
| 8 | JY44 | L7 | True | 20000.00 | 19632.374349 | 98.2 |



BATTELLE

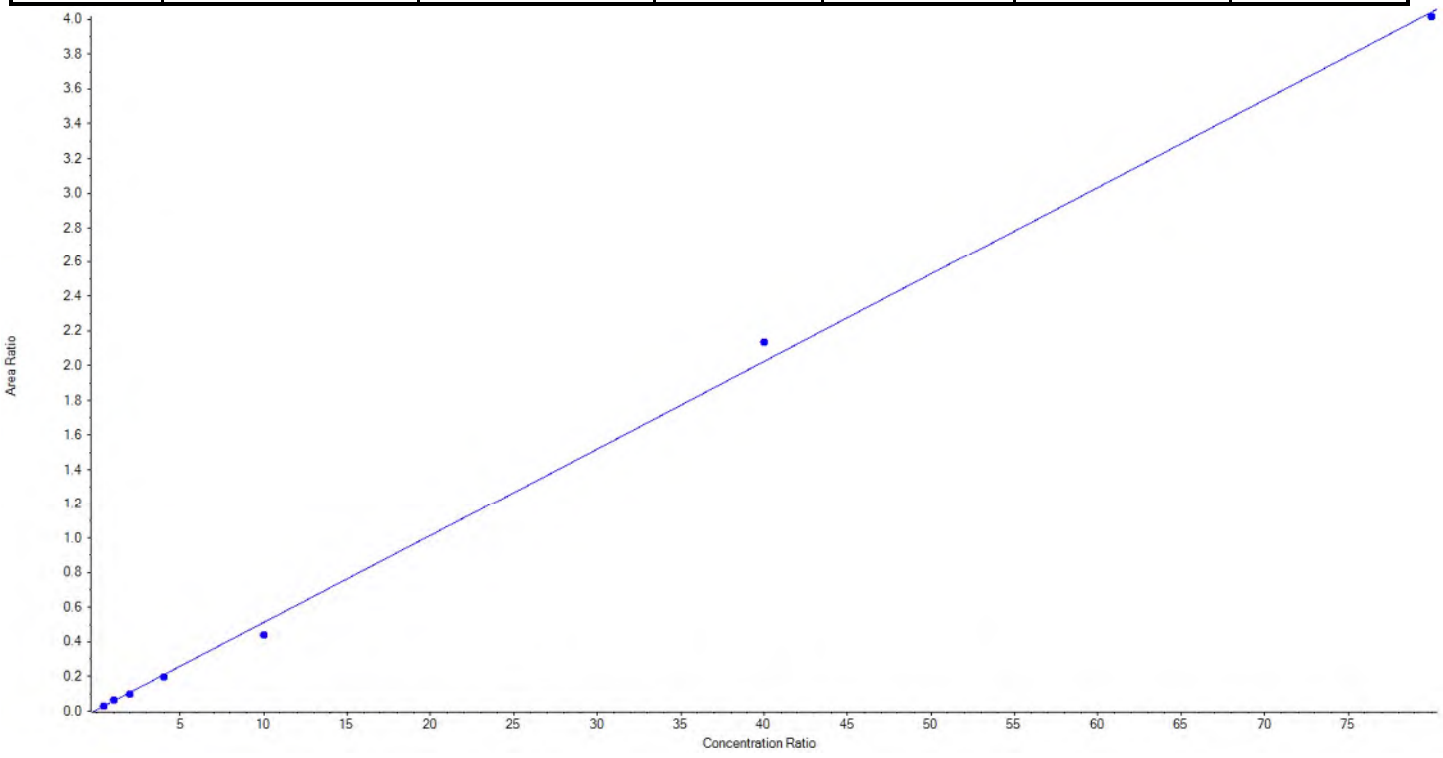
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFDA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 513.0 / 219.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C6-PFDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.05043 x + 0.00732 (r = 0.99845) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 114.079000 | 114.1 |
| 3 | JY39 | L2 | True | 250.00 | 275.419951 | 110.2 |
| 4 | JY40 | L3 | True | 500.00 | 457.576231 | 91.5 |
| 5 | JY41 | L4 | True | 1000.00 | 940.050222 | 94.0 |
| 6 | JY42 | L5 | True | 2500.00 | 2132.114826 | 85.3 |
| 7 | JY43 | L6 | True | 10000.00 | 10558.871916 | 105.6 |
| 8 | JY44 | L7 | True | 20000.00 | 19871.887855 | 99.4 |



BATTELLE

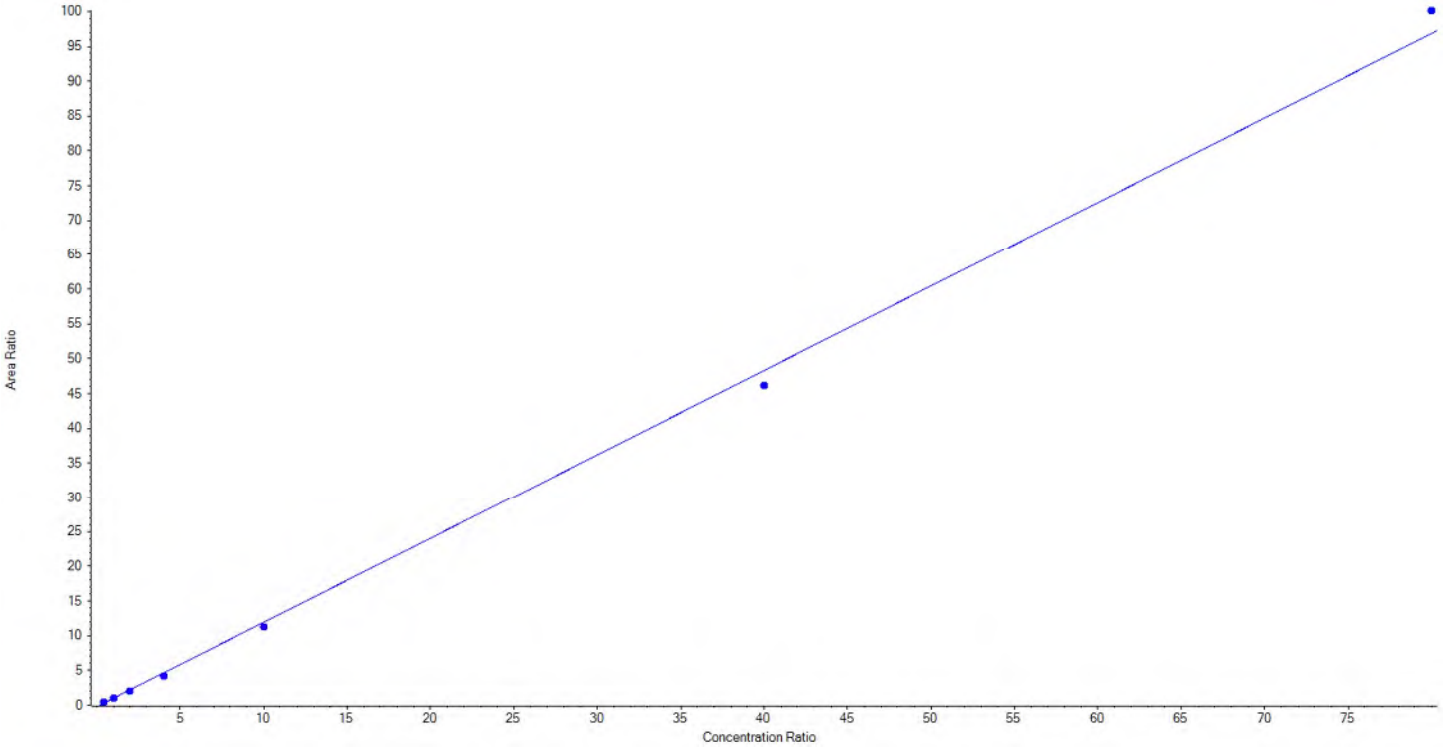
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFUnA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 563.0 / 519.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C7-PFUnA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.21353 x + -0.22259 (r = 0.99899) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 122.943043 | 122.9 |
| 3 | JY39 | L2 | True | 250.00 | 246.726851 | 98.7 |
| 4 | JY40 | L3 | True | 500.00 | 463.660604 | 92.7 |
| 5 | JY41 | L4 | True | 1000.00 | 919.395673 | 91.9 |
| 6 | JY42 | L5 | True | 2500.00 | 2369.453411 | 94.8 |
| 7 | JY43 | L6 | True | 10000.00 | 9555.457961 | 95.6 |
| 8 | JY44 | L7 | True | 20000.00 | 20672.362456 | 103.4 |



BATTELLE

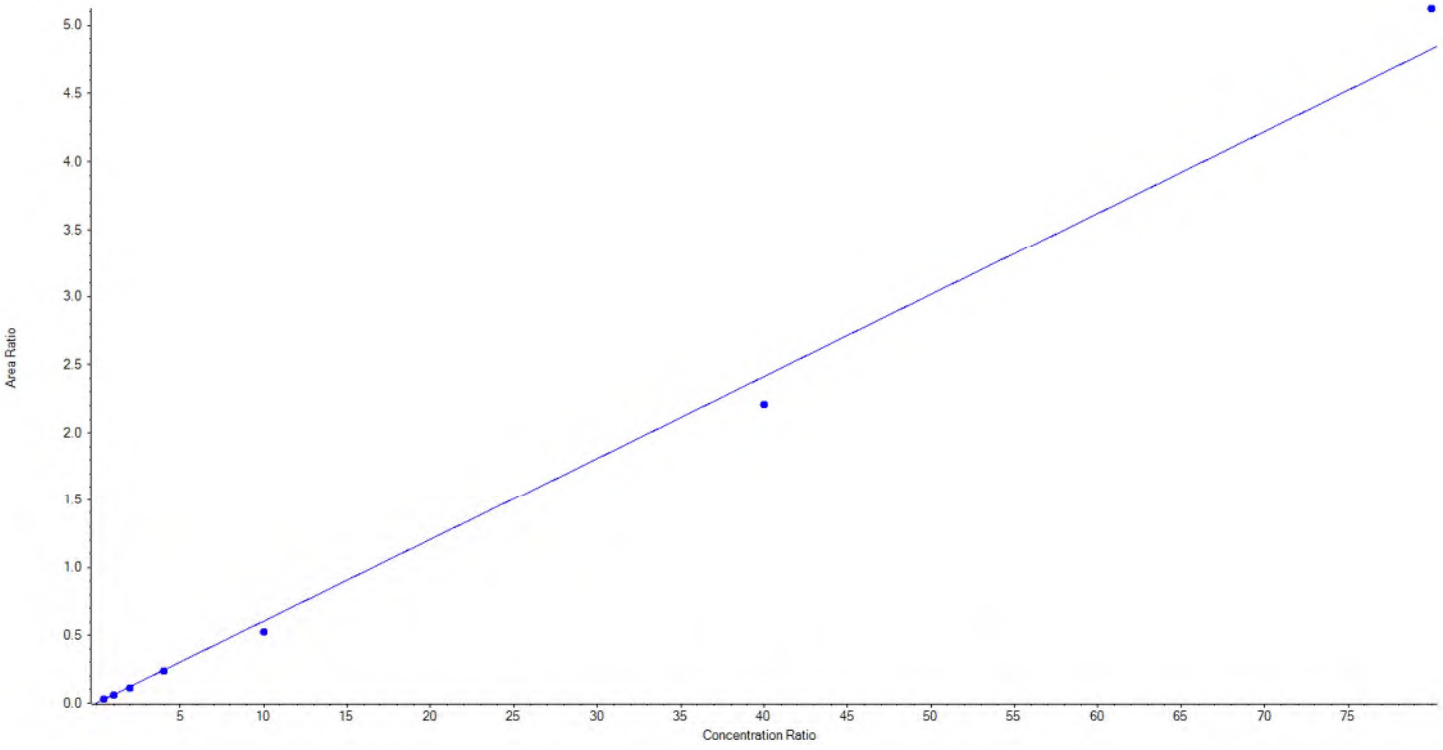
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFUnA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 563.0 / 269.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C7-PFUnA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.06032 x + 9.82959e-4 (r = 0.99675) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 129.206562 | 129.2 |
| 3 | JY39 | L2 | True | 250.00 | 241.347698 | 96.5 |
| 4 | JY40 | L3 | True | 500.00 | 467.242328 | 93.5 |
| 5 | JY41 | L4 | True | 1000.00 | 968.076678 | 96.8 |
| 6 | JY42 | L5 | True | 2500.00 | 2157.204163 | 86.3 |
| 7 | JY43 | L6 | True | 10000.00 | 9155.089249 | 91.6 |
| 8 | JY44 | L7 | True | 20000.00 | 21231.833322 | 106.2 |



BATTELLE

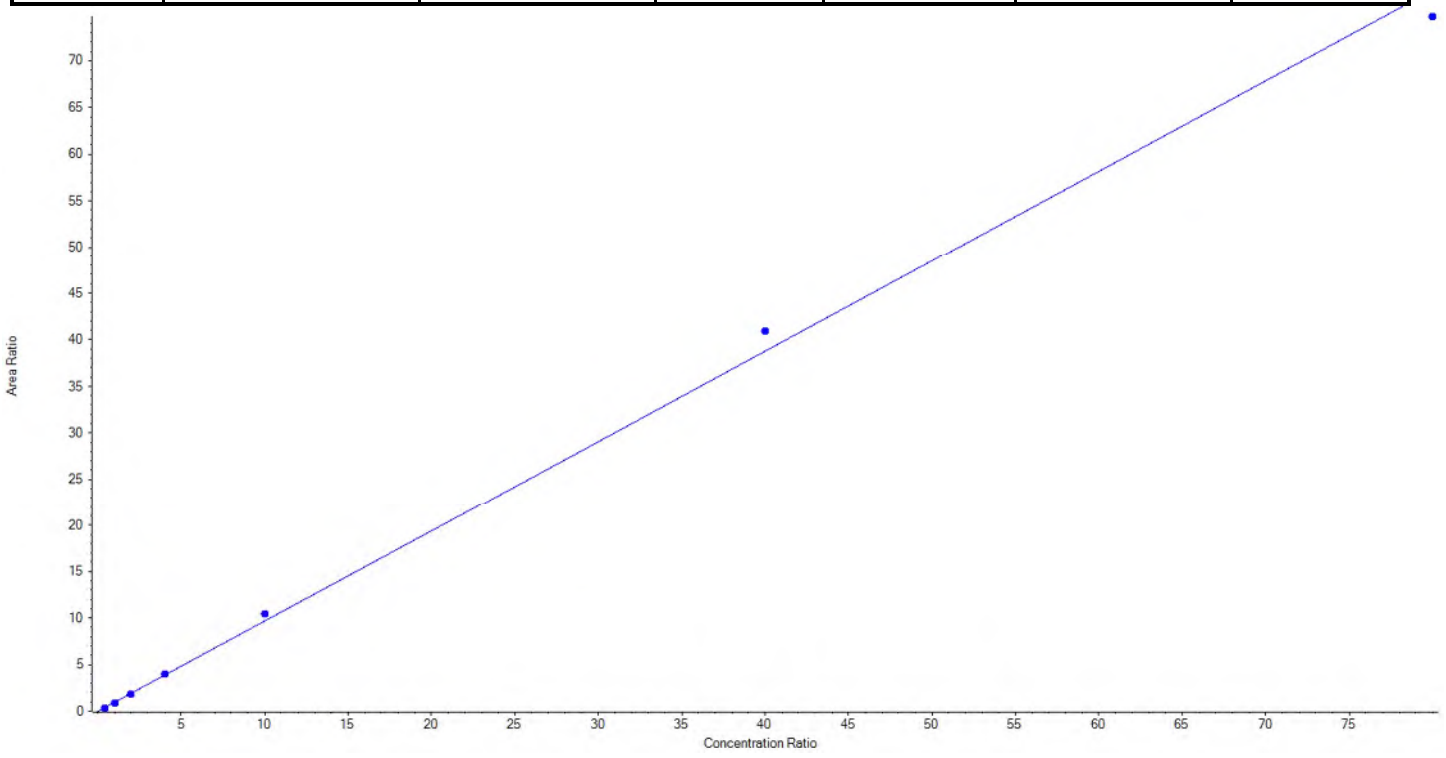
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFDoA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 613.0 / 569.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C2-PFDoA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.96946 x + -0.01373 (r = 0.99883) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 98.610714 | 98.6 |
| 3 | JY39 | L2 | True | 250.00 | 233.920658 | 93.6 |
| 4 | JY40 | L3 | True | 500.00 | 475.852120 | 95.2 |
| 5 | JY41 | L4 | True | 1000.00 | 1032.761138 | 103.3 |
| 6 | JY42 | L5 | True | 2500.00 | 2688.000463 | 107.5 |
| 7 | JY43 | L6 | True | 10000.00 | 10550.038320 | 105.5 |
| 8 | JY44 | L7 | True | 20000.00 | 19270.816586 | 96.4 |



BATTELLE

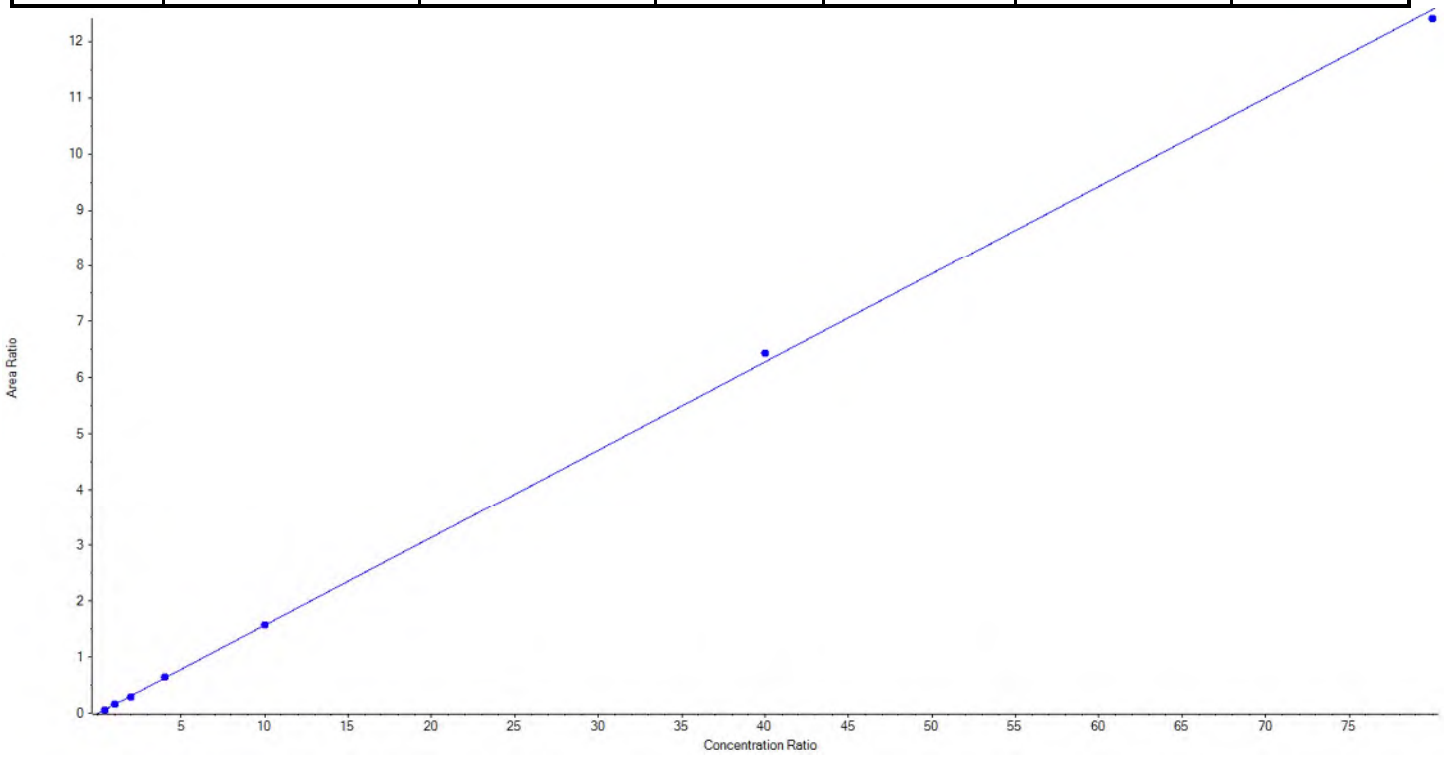
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFDoA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 613.0 / 319.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C2-PFDoA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.15718 x + -0.00485 (r = 0.99982) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 100.020562 | 100.0 |
| 3 | JY39 | L2 | True | 250.00 | 250.671630 | 100.3 |
| 4 | JY40 | L3 | True | 500.00 | 475.157931 | 95.0 |
| 5 | JY41 | L4 | True | 1000.00 | 1031.153986 | 103.1 |
| 6 | JY42 | L5 | True | 2500.00 | 2511.466237 | 100.5 |
| 7 | JY43 | L6 | True | 10000.00 | 10239.500617 | 102.4 |
| 8 | JY44 | L7 | True | 20000.00 | 19742.029037 | 98.7 |



BATTELLE

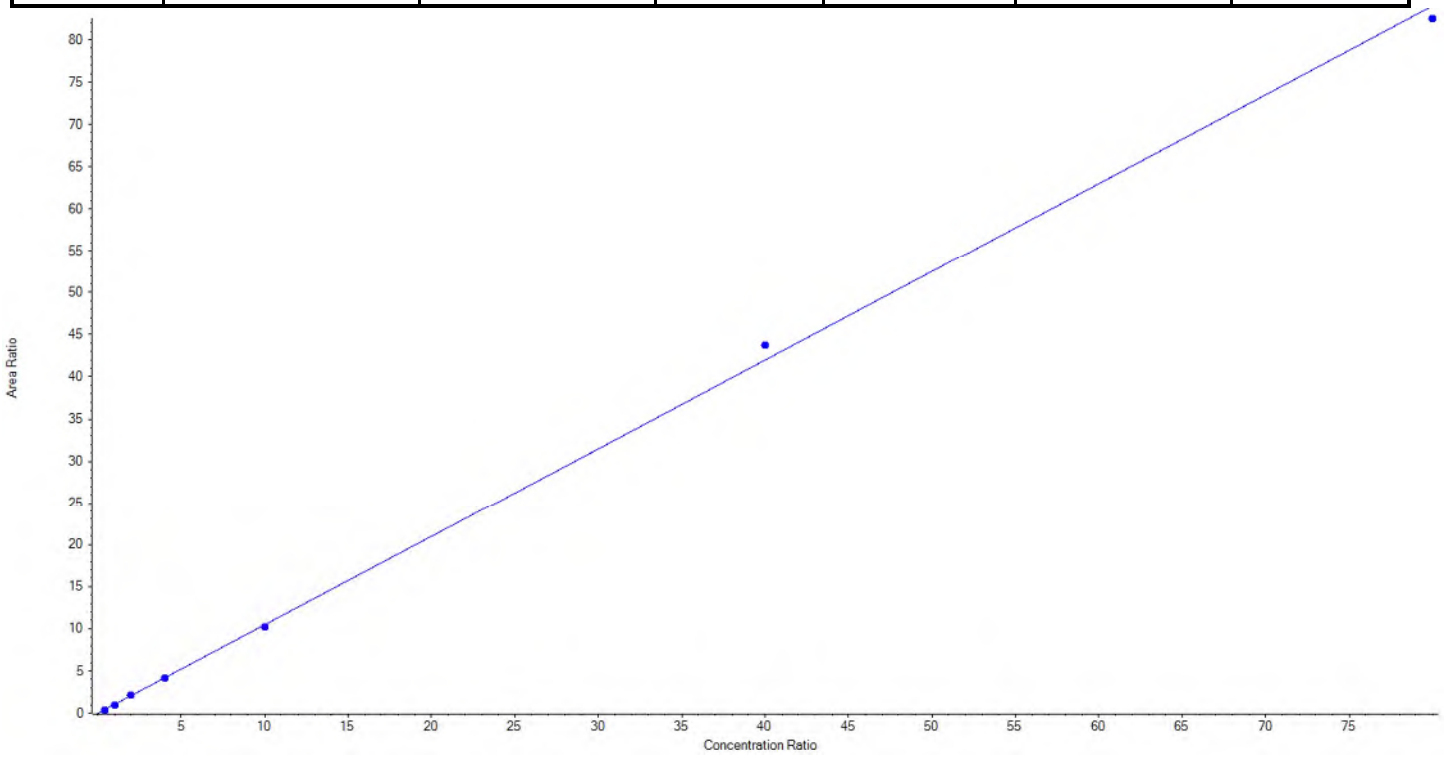
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFTrDA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 663.0 / 619.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C2-PFTeDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.05021 x + -0.02316 (r = 0.99959) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 103.989990 | 104.0 |
| 3 | JY39 | L2 | True | 250.00 | 237.901063 | 95.2 |
| 4 | JY40 | L3 | True | 500.00 | 506.941023 | 101.4 |
| 5 | JY41 | L4 | True | 1000.00 | 989.873487 | 99.0 |
| 6 | JY42 | L5 | True | 2500.00 | 2452.401261 | 98.1 |
| 7 | JY43 | L6 | True | 10000.00 | 10416.702985 | 104.2 |
| 8 | JY44 | L7 | True | 20000.00 | 19642.190190 | 98.2 |



BATTELLE

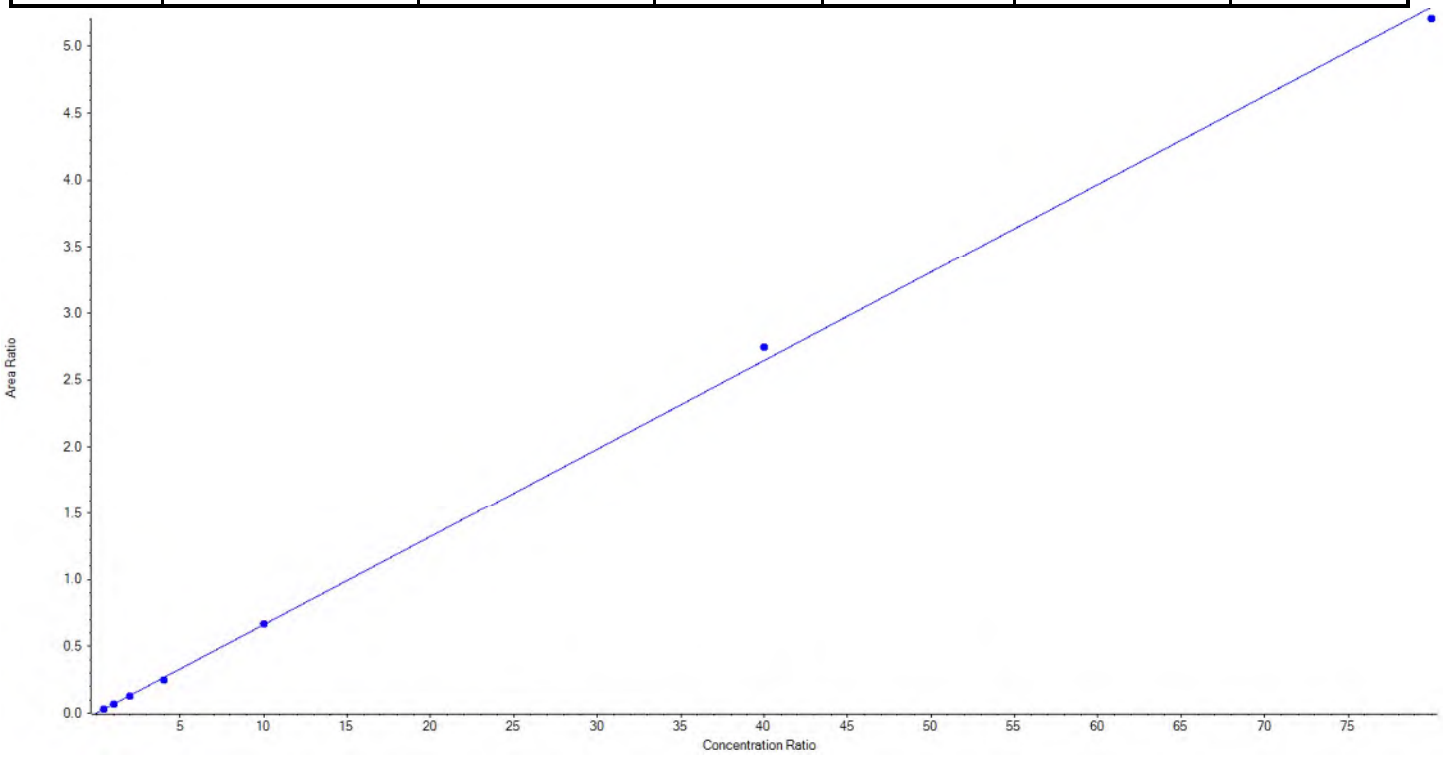
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFTrDA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 663.0 / 169.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C2-PFTeDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.06614 x + 4.21658e-4 (r = 0.99959) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 108.287462 | 108.3 |
| 3 | JY39 | L2 | True | 250.00 | 250.336593 | 100.1 |
| 4 | JY40 | L3 | True | 500.00 | 472.911739 | 94.6 |
| 5 | JY41 | L4 | True | 1000.00 | 938.882600 | 93.9 |
| 6 | JY42 | L5 | True | 2500.00 | 2523.167722 | 100.9 |
| 7 | JY43 | L6 | True | 10000.00 | 10379.703023 | 103.8 |
| 8 | JY44 | L7 | True | 20000.00 | 19676.710861 | 98.4 |



BATTELLE

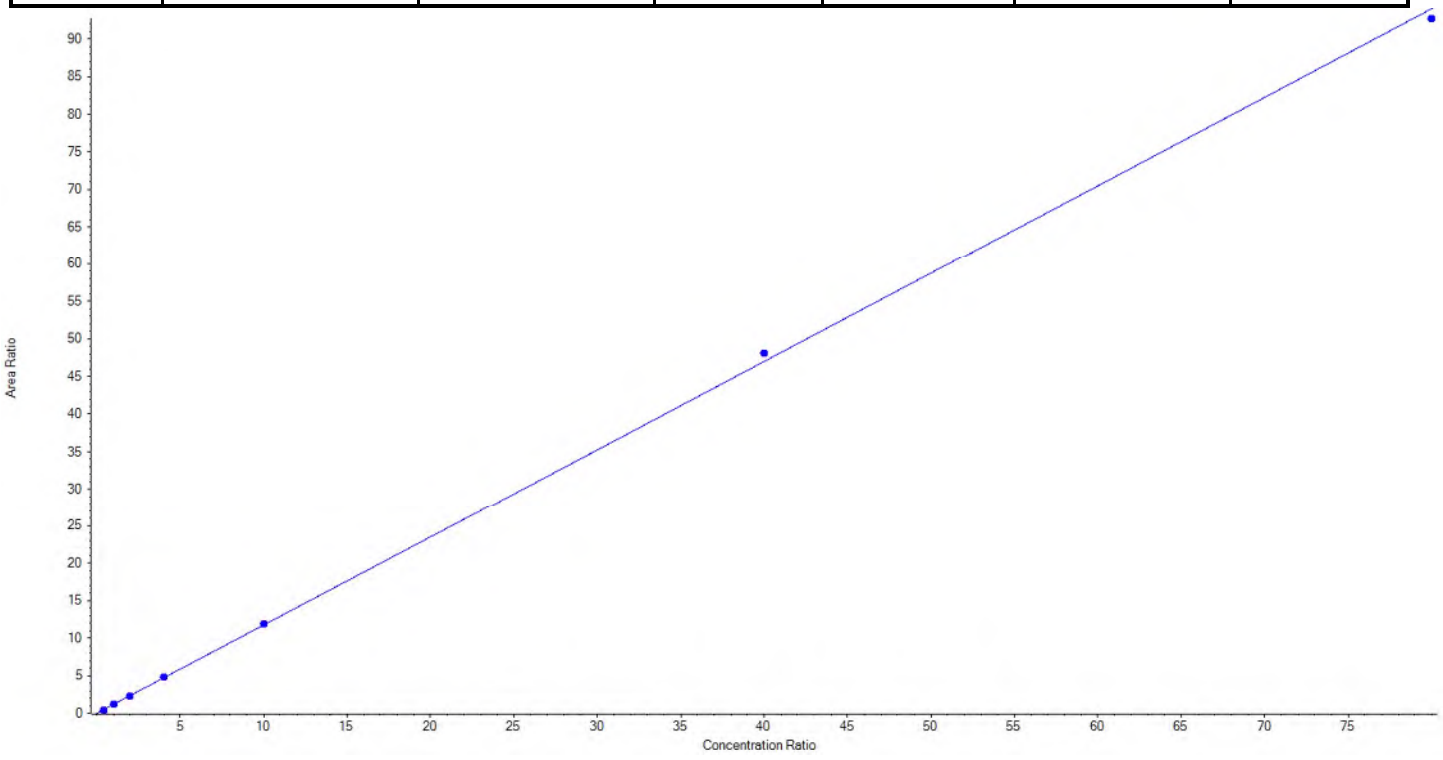
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFTeDA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 713.0 / 669.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C2-PFTeDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.17488 x + -0.00776 (r = 0.99984) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 98.523721 | 98.5 |
| 3 | JY39 | L2 | True | 250.00 | 248.858327 | 99.5 |
| 4 | JY40 | L3 | True | 500.00 | 490.541916 | 98.1 |
| 5 | JY41 | L4 | True | 1000.00 | 1012.450240 | 101.3 |
| 6 | JY42 | L5 | True | 2500.00 | 2540.117327 | 101.6 |
| 7 | JY43 | L6 | True | 10000.00 | 10235.461016 | 102.4 |
| 8 | JY44 | L7 | True | 20000.00 | 19724.047452 | 98.6 |



BATTELLE

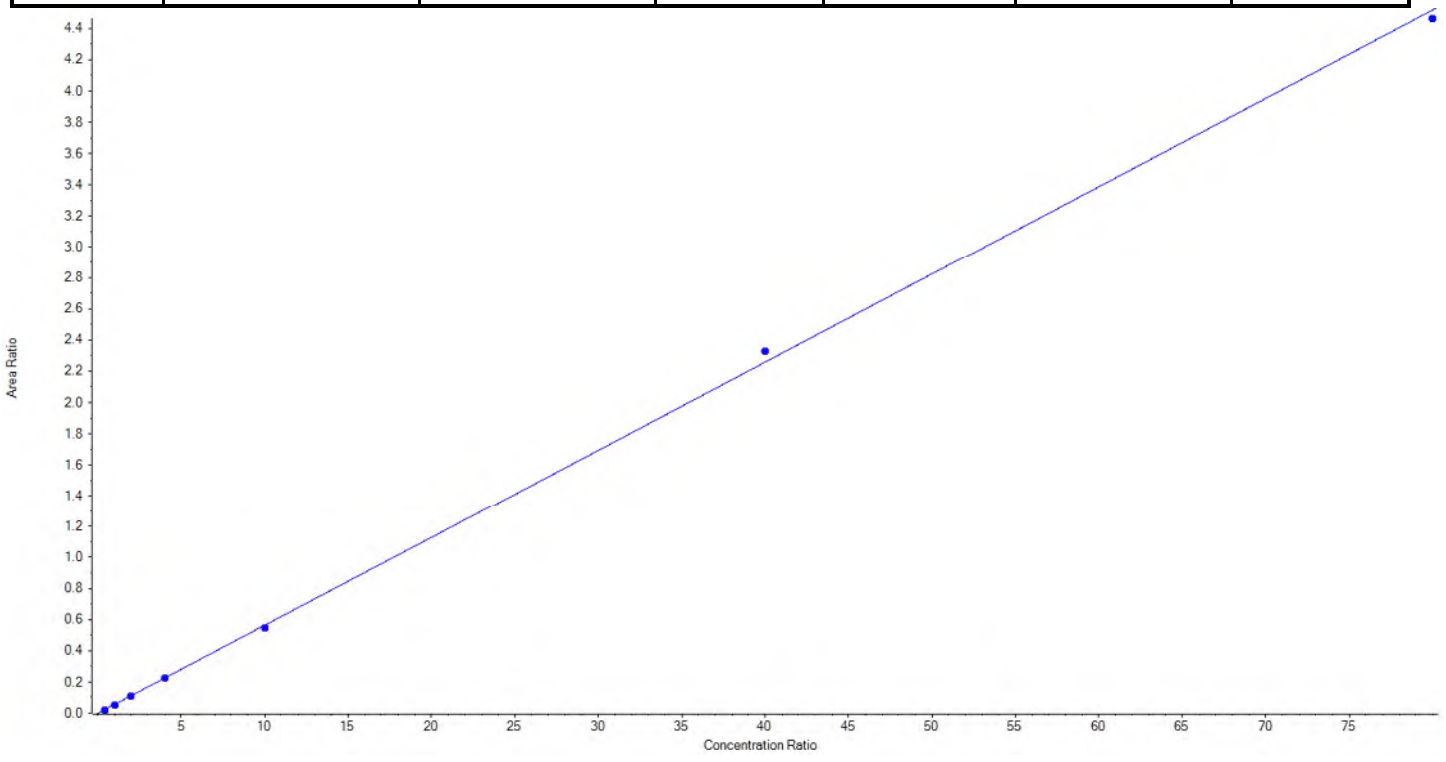
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFTeDA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 713.0 / 169.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C2-PFTeDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.05649 x + -0.00122 (r = 0.99976) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 103.942641 | 103.9 |
| 3 | JY39 | L2 | True | 250.00 | 243.654642 | 97.5 |
| 4 | JY40 | L3 | True | 500.00 | 499.075940 | 99.8 |
| 5 | JY41 | L4 | True | 1000.00 | 993.942996 | 99.4 |
| 6 | JY42 | L5 | True | 2500.00 | 2435.881968 | 97.4 |
| 7 | JY43 | L6 | True | 10000.00 | 10316.645427 | 103.2 |
| 8 | JY44 | L7 | True | 20000.00 | 19756.856386 | 98.8 |



BATTELLE

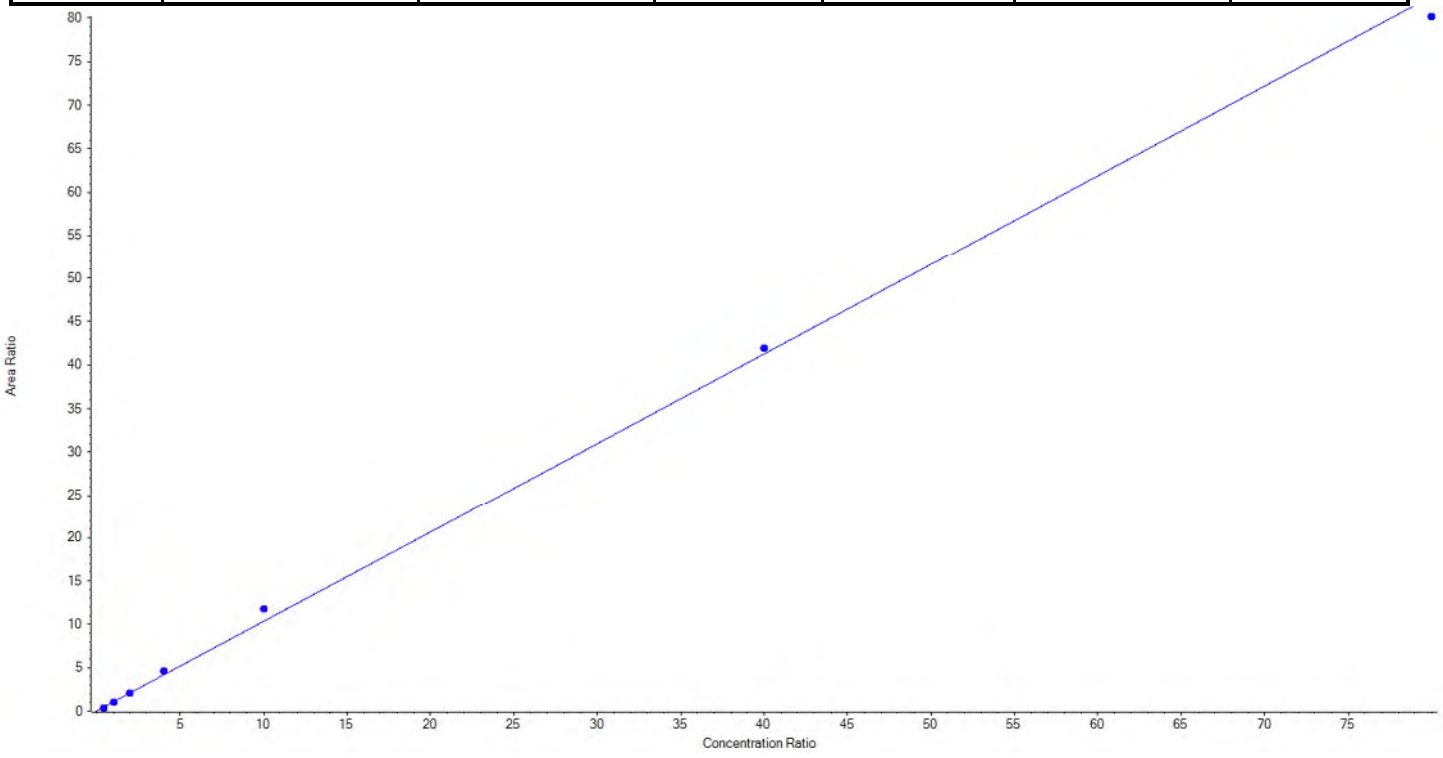
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | NMeFOSAA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 570.0 / 419.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | d3-MeFOSAA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.03070 x + 0.04450 (r = 0.99877) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 83.446543 | 83.5 |
| 3 | JY39 | L2 | True | 250.00 | 244.399054 | 97.8 |
| 4 | JY40 | L3 | True | 500.00 | 483.064727 | 96.6 |
| 5 | JY41 | L4 | True | 1000.00 | 1097.700385 | 109.8 |
| 6 | JY42 | L5 | True | 2500.00 | 2838.922966 | 113.6 |
| 7 | JY43 | L6 | True | 10000.00 | 10168.320127 | 101.7 |
| 8 | JY44 | L7 | True | 20000.00 | 19434.146196 | 97.2 |



BATTELLE

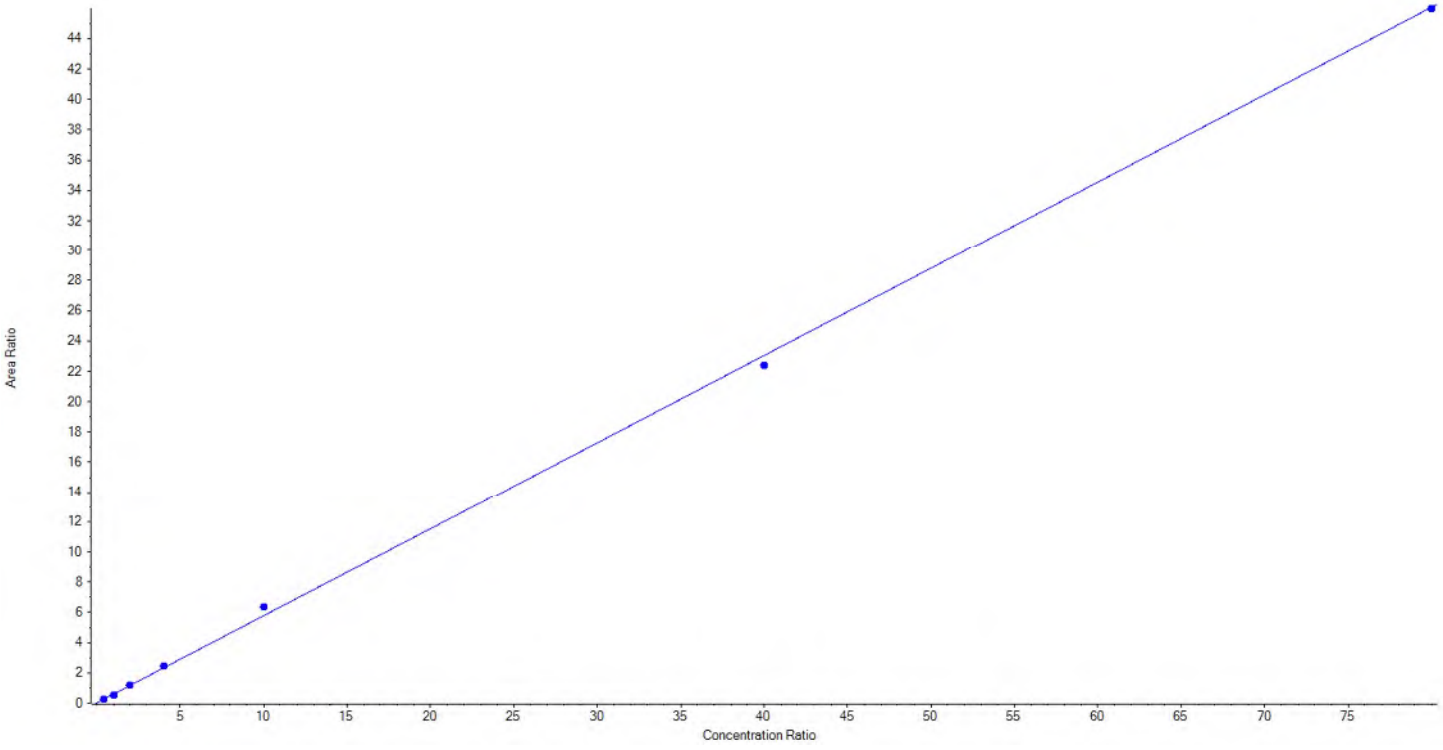
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | NMeFOSAA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 570.0 / 512.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | d3-MeFOSAA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.57549 x + 0.02501 (r = 0.99932) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 94.256719 | 94.3 |
| 3 | JY39 | L2 | True | 250.00 | 226.726746 | 90.7 |
| 4 | JY40 | L3 | True | 500.00 | 502.520187 | 100.5 |
| 5 | JY41 | L4 | True | 1000.00 | 1068.138462 | 106.8 |
| 6 | JY42 | L5 | True | 2500.00 | 2765.525131 | 110.6 |
| 7 | JY43 | L6 | True | 10000.00 | 9729.906041 | 97.3 |
| 8 | JY44 | L7 | True | 20000.00 | 19962.926715 | 99.8 |



BATTELLE

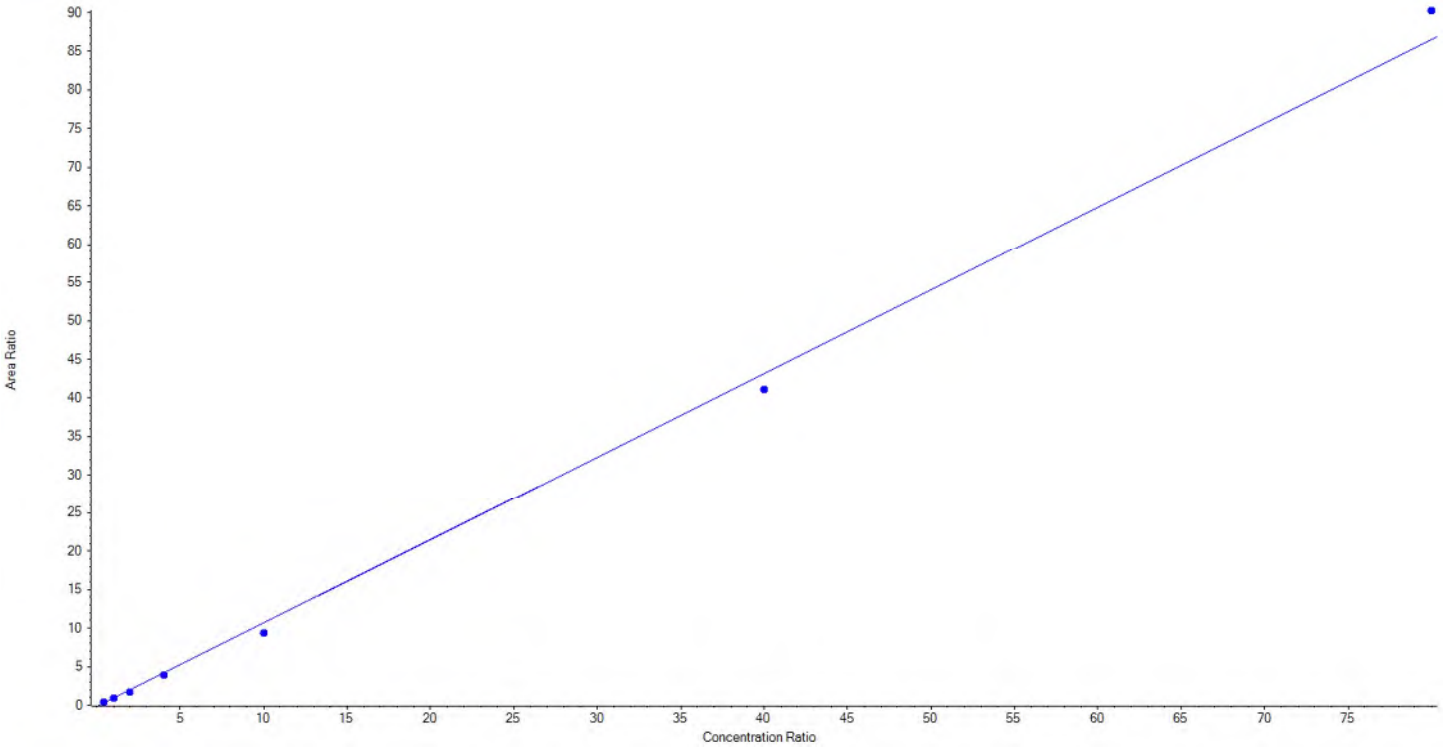
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | NEtFOSAA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 584.0 / 419.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | d5-EtFOSAA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.08361 x + -0.17934 (r = 0.99815) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 127.151255 | 127.2 |
| 3 | JY39 | L2 | True | 250.00 | 265.679934 | 106.3 |
| 4 | JY40 | L3 | True | 500.00 | 423.940233 | 84.8 |
| 5 | JY41 | L4 | True | 1000.00 | 937.778212 | 93.8 |
| 6 | JY42 | L5 | True | 2500.00 | 2212.318765 | 88.5 |
| 7 | JY43 | L6 | True | 10000.00 | 9520.499075 | 95.2 |
| 8 | JY44 | L7 | True | 20000.00 | 20862.632526 | 104.3 |



BATTELLE

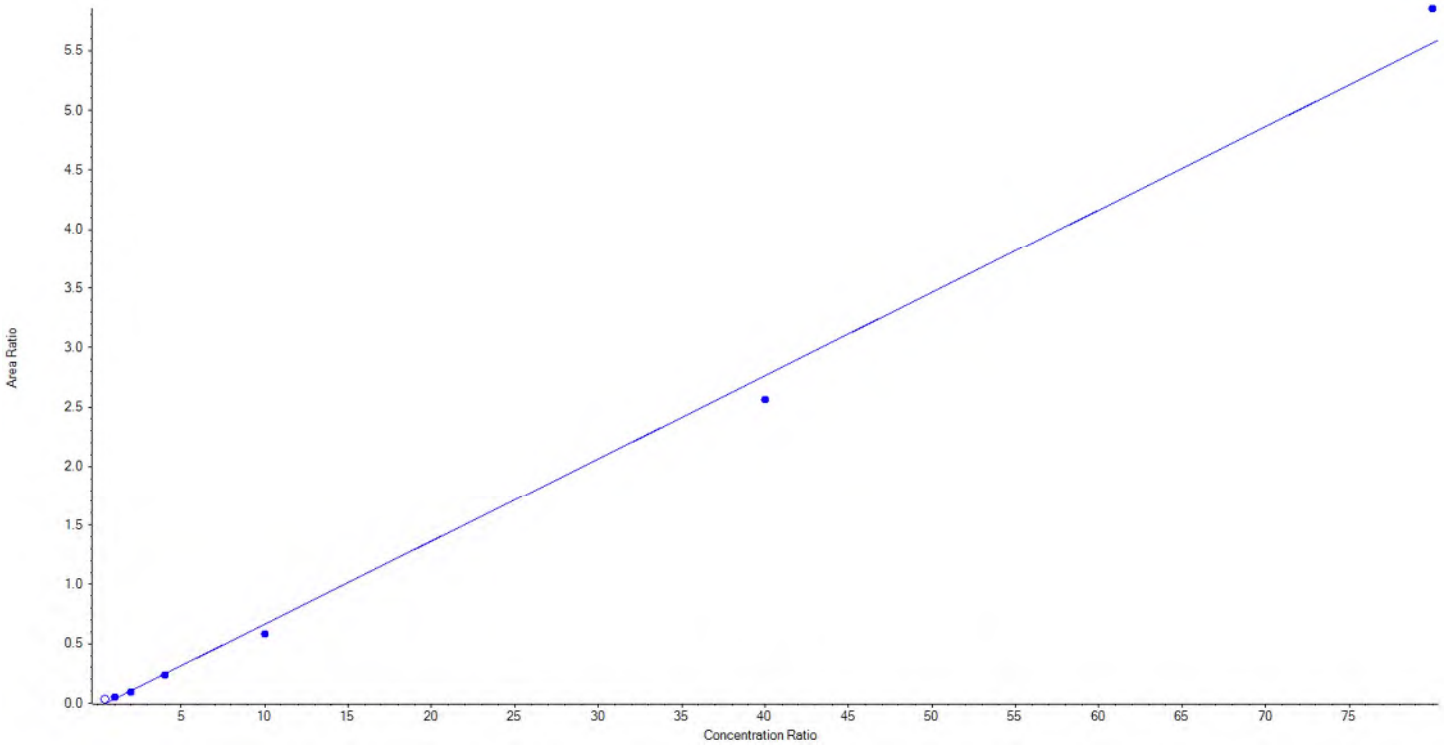
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | NEtFOSAA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 584.0 / 483.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | d5-EtFOSAA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.06998 x + -0.03555 (r = 0.99717) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | False | 100.00 | 236.281227 | 236.3 |
| 3 | JY39 | L2 | True | 250.00 | 319.753372 | 127.9 |
| 4 | JY40 | L3 | True | 500.00 | 443.979478 | 88.8 |
| 5 | JY41 | L4 | True | 1000.00 | 974.254801 | 97.4 |
| 6 | JY42 | L5 | True | 2500.00 | 2197.277628 | 87.9 |
| 7 | JY43 | L6 | True | 10000.00 | 9282.499347 | 92.8 |
| 8 | JY44 | L7 | True | 20000.00 | 21032.235373 | 105.2 |



BATTELLE

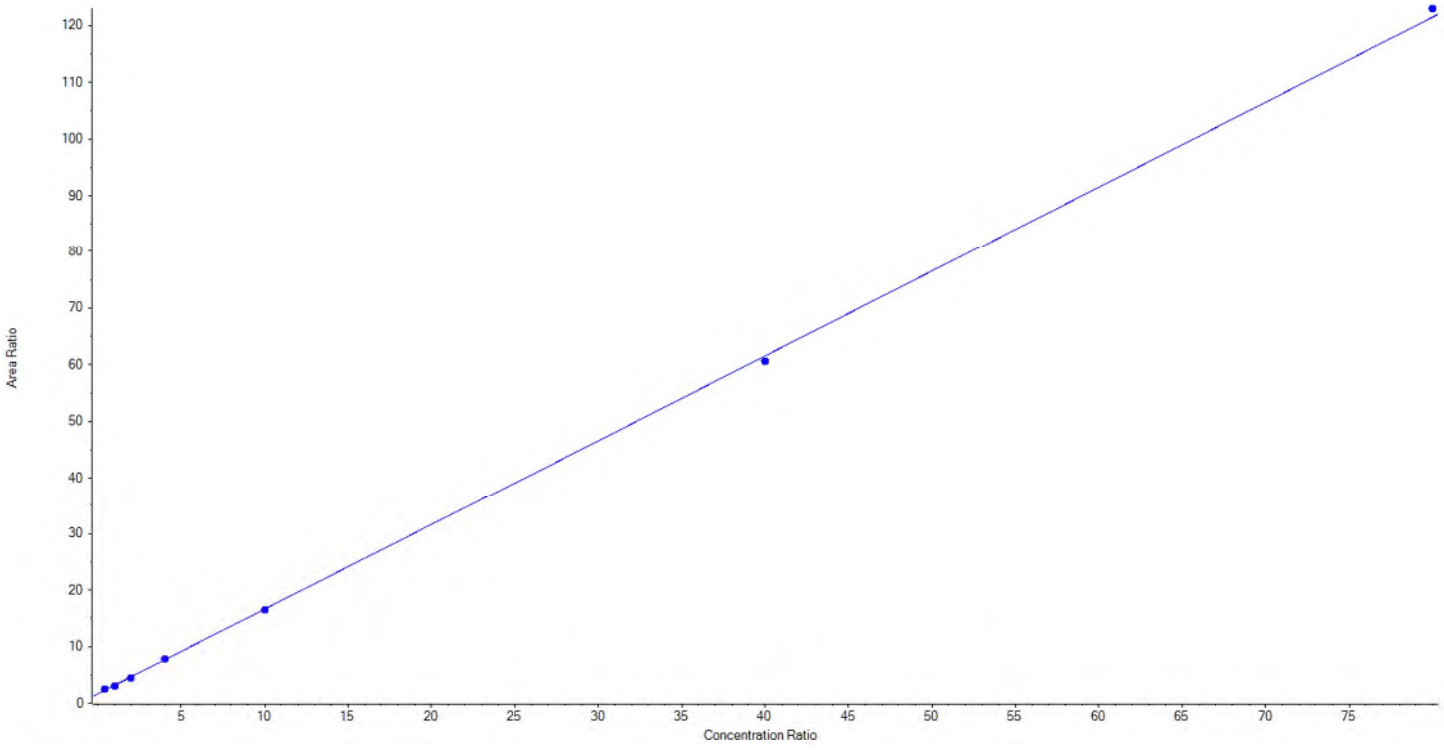
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFBA | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 213.0 / 169.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C4-PFBA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.49737 x + 1.65863 (r = 0.99966) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 123.865780 | 123.9 |
| 3 | JY39 | L2 | True | 250.00 | 212.658218 | 85.1 |
| 4 | JY40 | L3 | True | 500.00 | 458.648283 | 91.7 |
| 5 | JY41 | L4 | True | 1000.00 | 1010.839022 | 101.1 |
| 6 | JY42 | L5 | True | 2500.00 | 2469.015087 | 98.8 |
| 7 | JY43 | L6 | True | 10000.00 | 9824.380506 | 98.2 |
| 8 | JY44 | L7 | True | 20000.00 | 20250.593105 | 101.3 |



BATTELLE

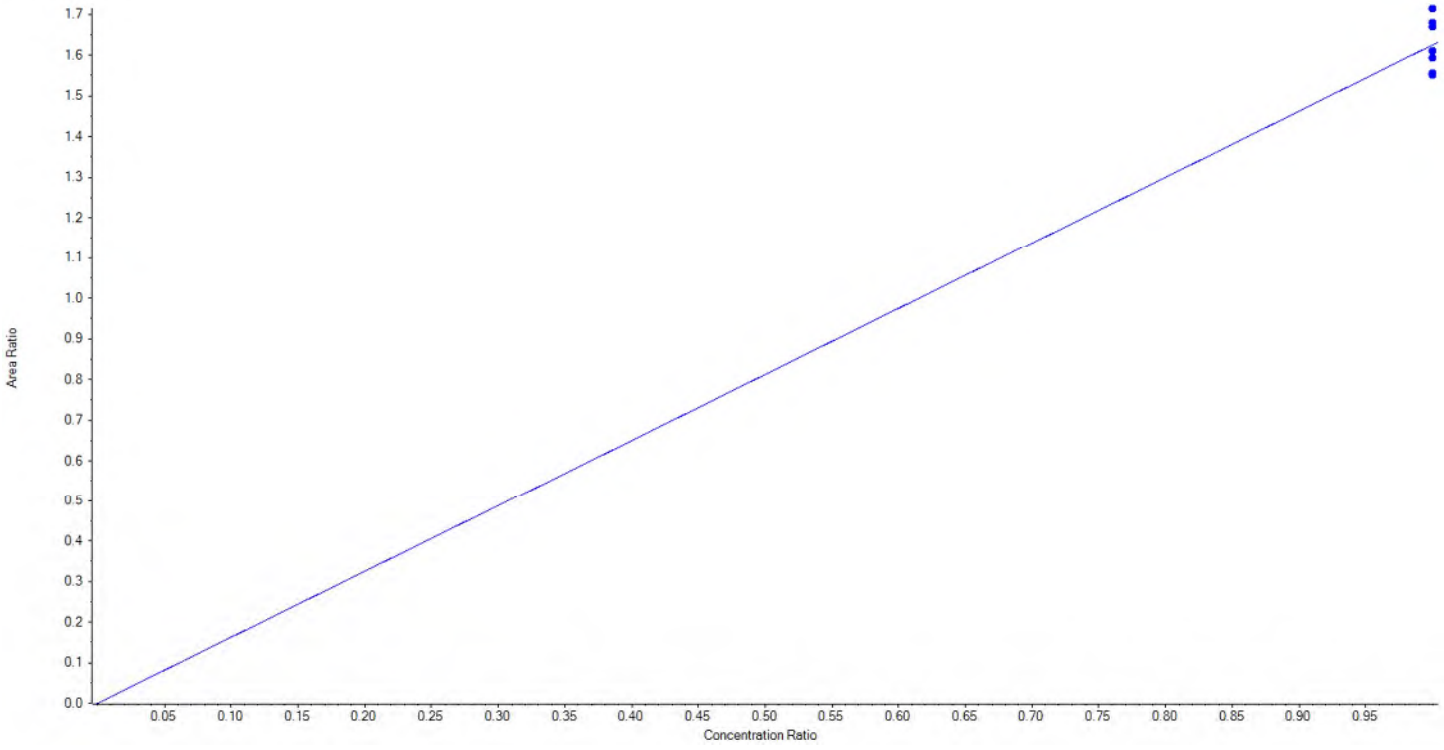
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:11:05 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | 13C4-PFBA | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 217.0 / 172.0 | **Result Table** | 18-0520_SIS |
| **Internal Standard** | 13C3-PFBA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.62506 x (std. dev. = 0.06335) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 250.00 | 263.706951 | 105.5 |
| 3 | JY39 | L2 | True | 250.00 | 258.296214 | 103.3 |
| 4 | JY40 | L3 | True | 250.00 | 245.137022 | 98.1 |
| 5 | JY41 | L4 | True | 250.00 | 247.884907 | 99.2 |
| 6 | JY42 | L5 | True | 250.00 | 239.575462 | 95.8 |
| 7 | JY43 | L6 | True | 250.00 | 238.595520 | 95.4 |
| 8 | JY44 | L7 | True | 250.00 | 256.803925 | 102.7 |



BATTELLE

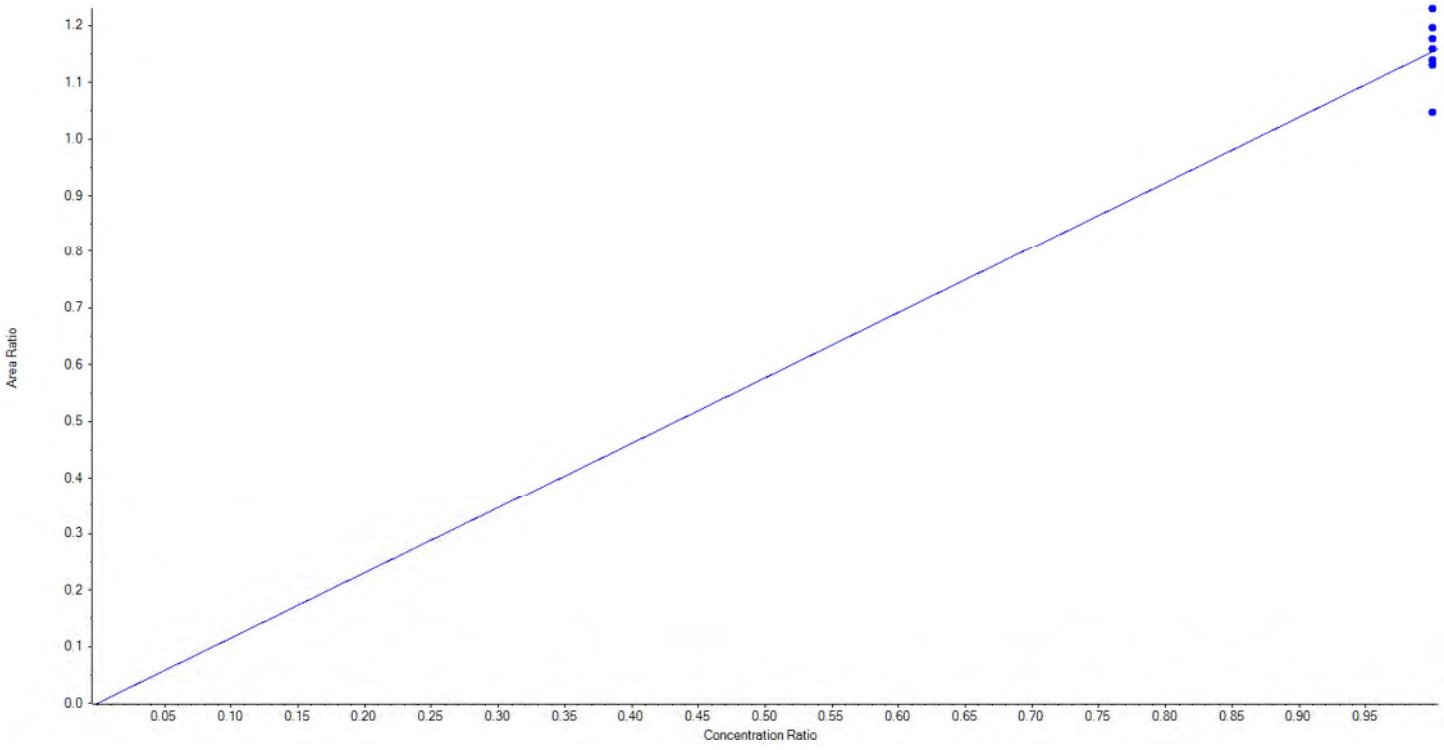
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:11:05 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | 13C2-PFDoA | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 615.0 / 570.0 | **Result Table** | 18-0520_SIS |
| **Internal Standard** | 13C2-PFDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.15355 x (std. dev. = 0.05775) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 250.00 | 259.030708 | 103.6 |
| 3 | JY39 | L2 | True | 250.00 | 244.929132 | 98.0 |
| 4 | JY40 | L3 | True | 250.00 | 251.034787 | 100.4 |
| 5 | JY41 | L4 | True | 250.00 | 246.787054 | 98.7 |
| 6 | JY42 | L5 | True | 250.00 | 254.752203 | 101.9 |
| 7 | JY43 | L6 | True | 250.00 | 227.018868 | 90.8 |
| 8 | JY44 | L7 | True | 250.00 | 266.447249 | 106.6 |



BATTELLE

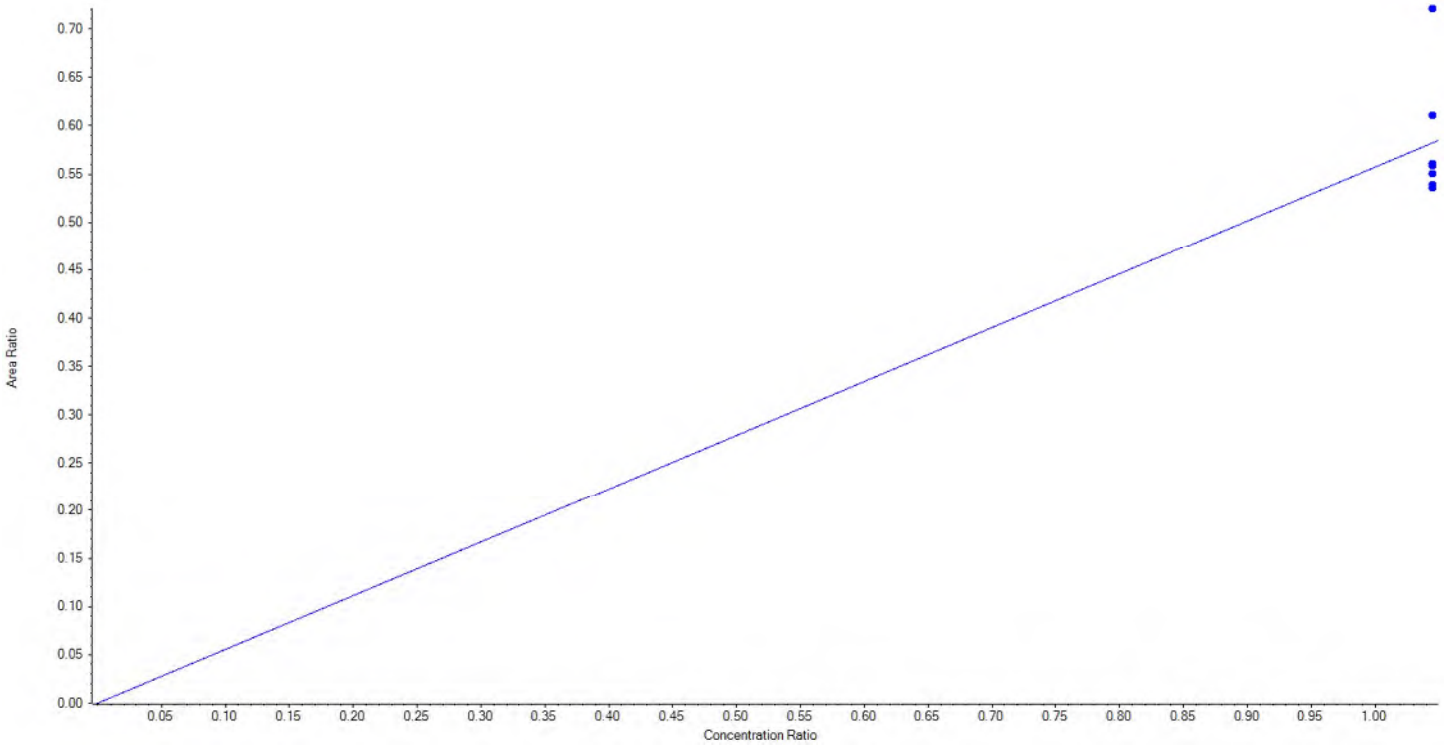
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:11:05 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | d3-MeFOSAA | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 573.0 / 419.0 | **Result Table** | 18-0520_SIS |
| **Internal Standard** | 13C4-PFOS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.55727 x (std. dev. = 0.06311) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 250.00 | 240.622830 | 96.3 |
| 3 | JY39 | L2 | True | 250.00 | 231.485404 | 92.6 |
| 4 | JY40 | L3 | True | 250.00 | 229.902068 | 92.0 |
| 5 | JY41 | L4 | True | 250.00 | 236.565126 | 94.6 |
| 6 | JY42 | L5 | True | 250.00 | 239.715946 | 95.9 |
| 7 | JY43 | L6 | True | 250.00 | 262.212753 | 104.9 |
| 8 | JY44 | L7 | True | 250.00 | 309.495872 | 123.8 |



BATTELLE

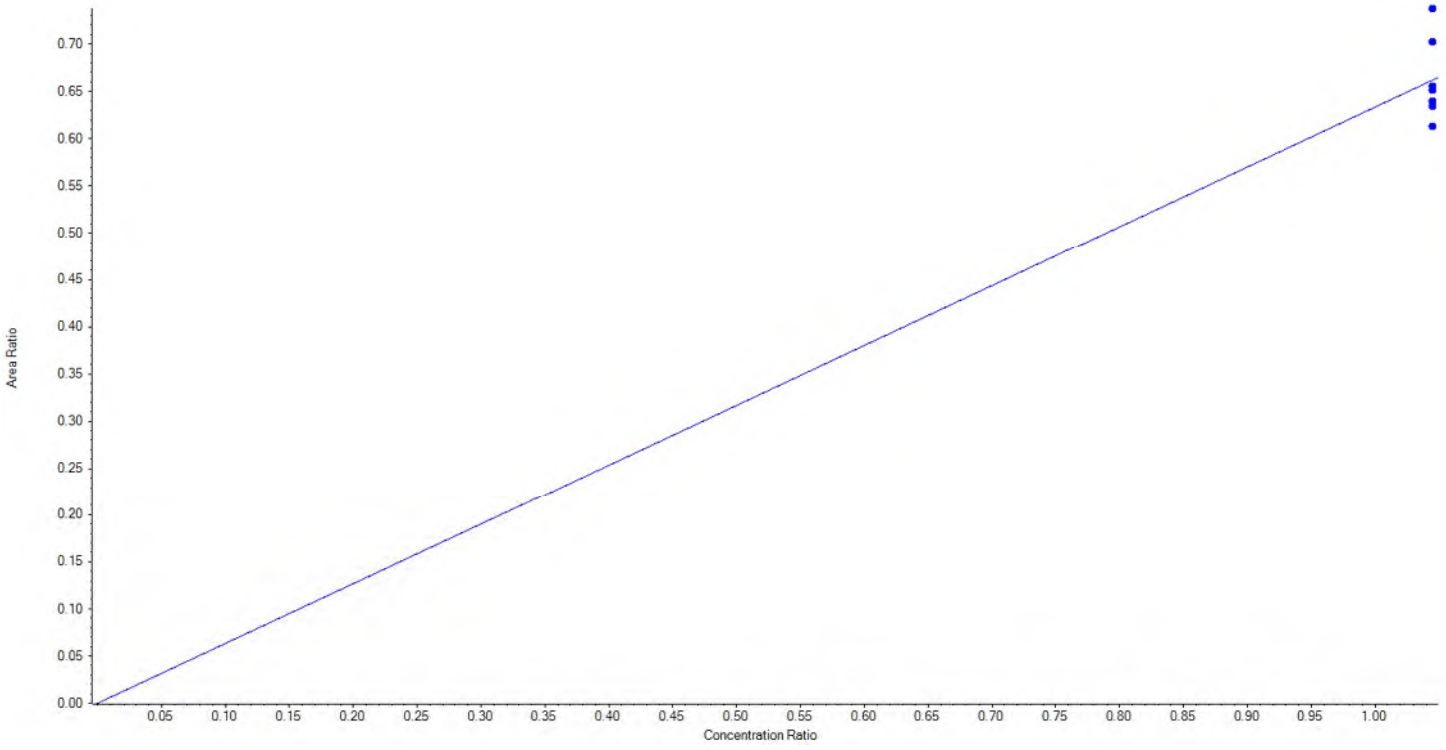
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:11:05 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | d5-EtFOSAA | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 589.0 / 419.0 | **Result Table** | 18-0520_SIS |
| **Internal Standard** | 13C4-PFOS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.63350 x (std. dev. = 0.04112) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 250.00 | 245.891395 | 98.4 |
| 3 | JY39 | L2 | True | 250.00 | 239.620284 | 95.9 |
| 4 | JY40 | L3 | True | 250.00 | 265.122265 | 106.1 |
| 5 | JY41 | L4 | True | 250.00 | 247.730920 | 99.1 |
| 6 | JY42 | L5 | True | 250.00 | 278.506795 | 111.4 |
| 7 | JY43 | L6 | True | 250.00 | 231.672410 | 92.7 |
| 8 | JY44 | L7 | True | 250.00 | 241.455931 | 96.6 |



BATTELLE

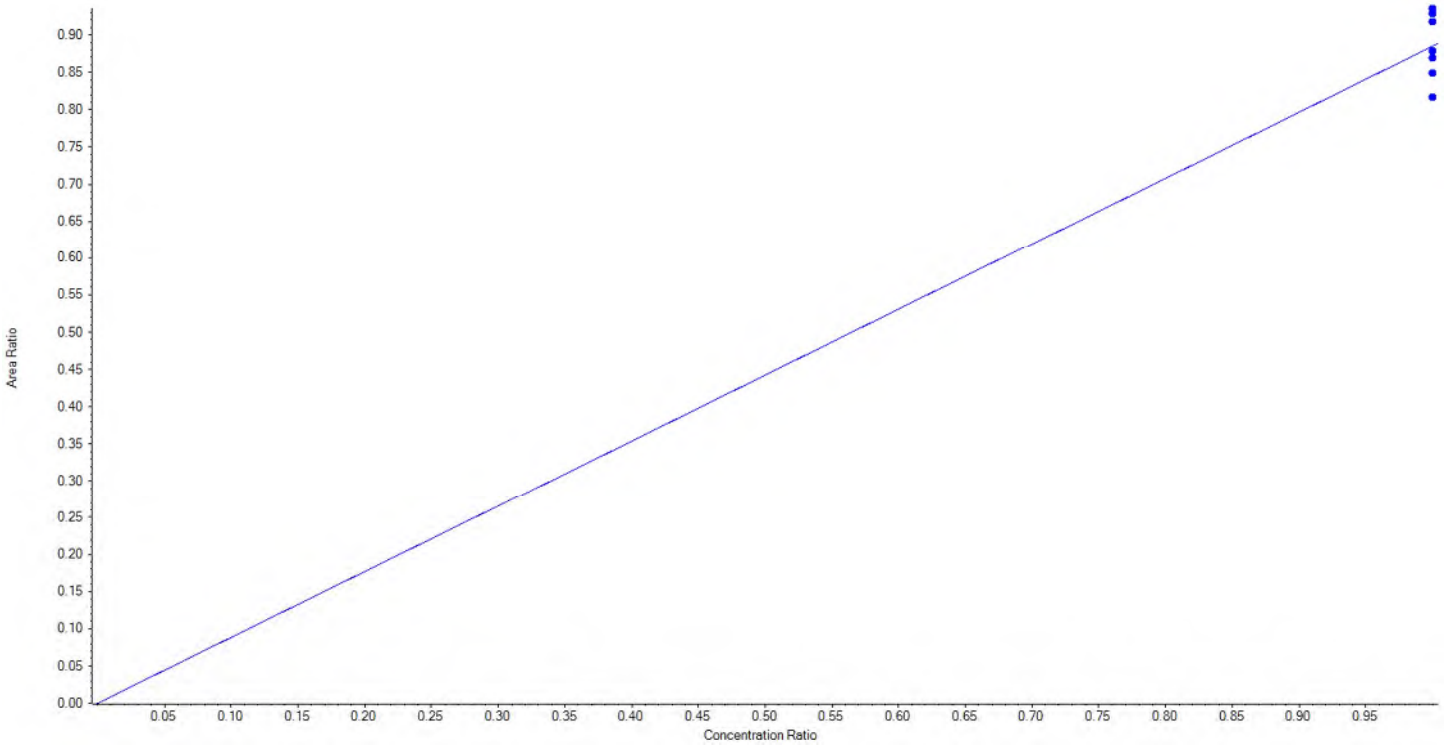
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:11:05 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | 13C5-PFHxA | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 318.0 / 273.0 | **Result Table** | 18-0520_SIS |
| **Internal Standard** | 13C2-PFOA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.88489 x (std. dev. = 0.04408) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 250.00 | 245.578330 | 98.2 |
| 3 | JY39 | L2 | True | 250.00 | 230.912320 | 92.4 |
| 4 | JY40 | L3 | True | 250.00 | 248.137717 | 99.3 |
| 5 | JY41 | L4 | True | 250.00 | 264.228232 | 105.7 |
| 6 | JY42 | L5 | True | 250.00 | 259.099772 | 103.6 |
| 7 | JY43 | L6 | True | 250.00 | 239.714839 | 95.9 |
| 8 | JY44 | L7 | True | 250.00 | 262.328791 | 104.9 |



BATTELLE

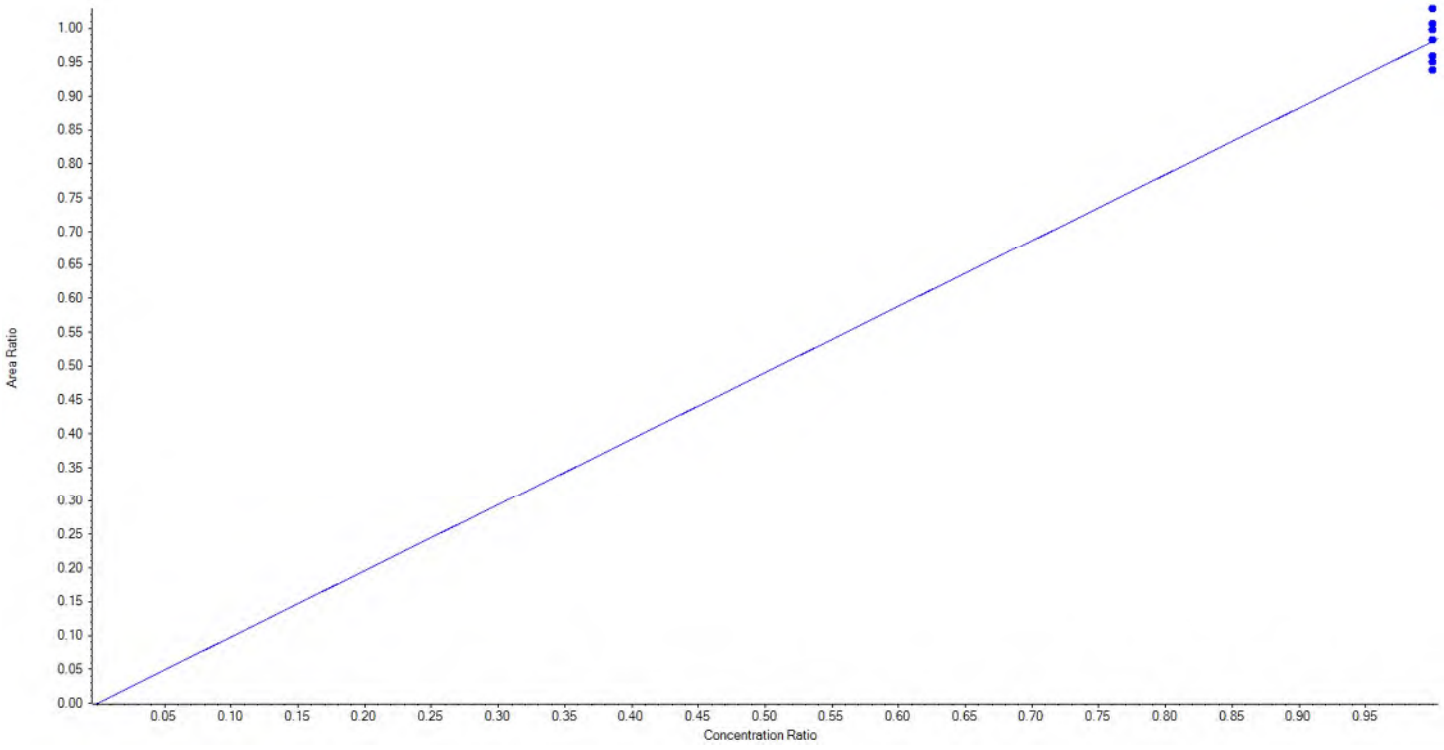
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:11:05 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | 13C4-PFHpA | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 367.0 / 322.0 | **Result Table** | 18-0520_SIS |
| **Internal Standard** | 13C2-PFOA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.98067 x (std. dev. = 0.03293) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 250.00 | 256.566788 | 102.6 |
| 3 | JY39 | L2 | True | 250.00 | 244.532935 | 97.8 |
| 4 | JY40 | L3 | True | 250.00 | 254.422857 | 101.8 |
| 5 | JY41 | L4 | True | 250.00 | 242.205202 | 96.9 |
| 6 | JY42 | L5 | True | 250.00 | 262.318521 | 104.9 |
| 7 | JY43 | L6 | True | 250.00 | 239.178000 | 95.7 |
| 8 | JY44 | L7 | True | 250.00 | 250.775698 | 100.3 |



BATTELLE

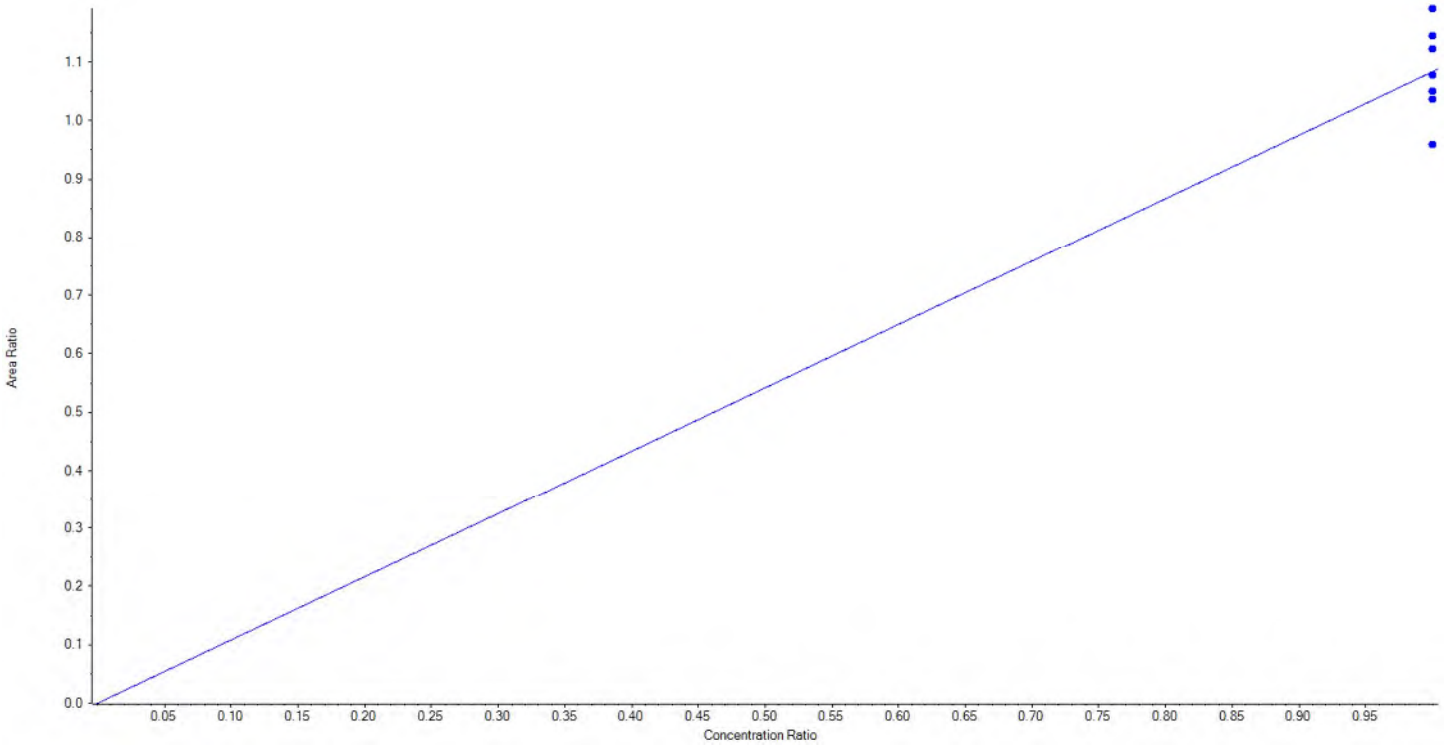
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:11:05 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | 13C8-PFOA | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 421.0 / 376.0 | **Result Table** | 18-0520_SIS |
| **Internal Standard** | 13C2-PFOA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.08347 x (std. dev. = 0.07668) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 250.00 | 274.833039 | 109.9 |
| 3 | JY39 | L2 | True | 250.00 | 248.718208 | 99.5 |
| 4 | JY40 | L3 | True | 250.00 | 258.955725 | 103.6 |
| 5 | JY41 | L4 | True | 250.00 | 242.556696 | 97.0 |
| 6 | JY42 | L5 | True | 250.00 | 264.099346 | 105.6 |
| 7 | JY43 | L6 | True | 250.00 | 239.321013 | 95.7 |
| 8 | JY44 | L7 | True | 250.00 | 221.515973 | 88.6 |



BATTELLE

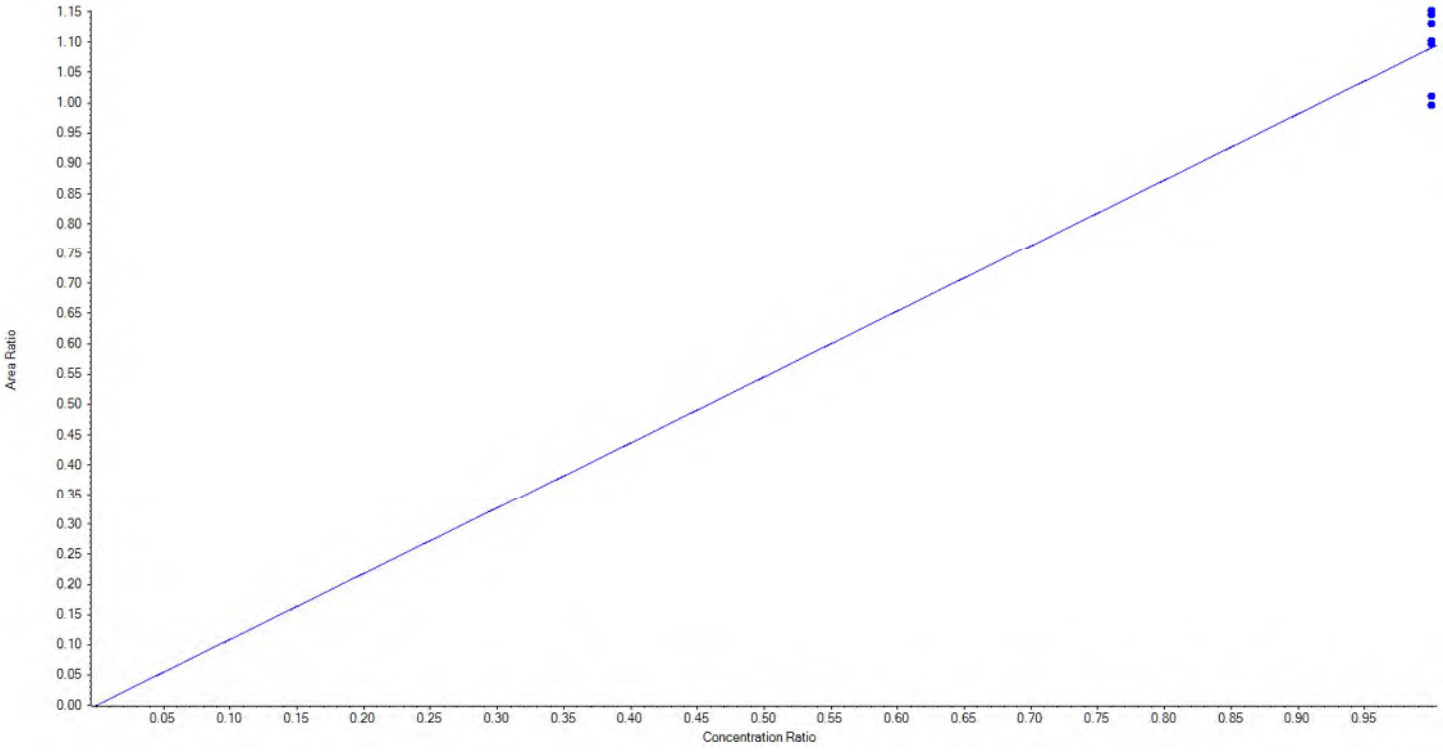
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:11:05 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | 13C9-PFNA | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 472.0 / 427.0 | **Result Table** | 18-0520_SIS |
| **Internal Standard** | 13C2-PFOA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.09055 x (std. dev. = 0.06296) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 250.00 | 264.071238 | 105.6 |
| 3 | JY39 | L2 | True | 250.00 | 228.389124 | 91.4 |
| 4 | JY40 | L3 | True | 250.00 | 252.783354 | 101.1 |
| 5 | JY41 | L4 | True | 250.00 | 259.093464 | 103.6 |
| 6 | JY42 | L5 | True | 250.00 | 262.556550 | 105.0 |
| 7 | JY43 | L6 | True | 250.00 | 231.704047 | 92.7 |
| 8 | JY44 | L7 | True | 250.00 | 251.402222 | 100.6 |



BATTELLE

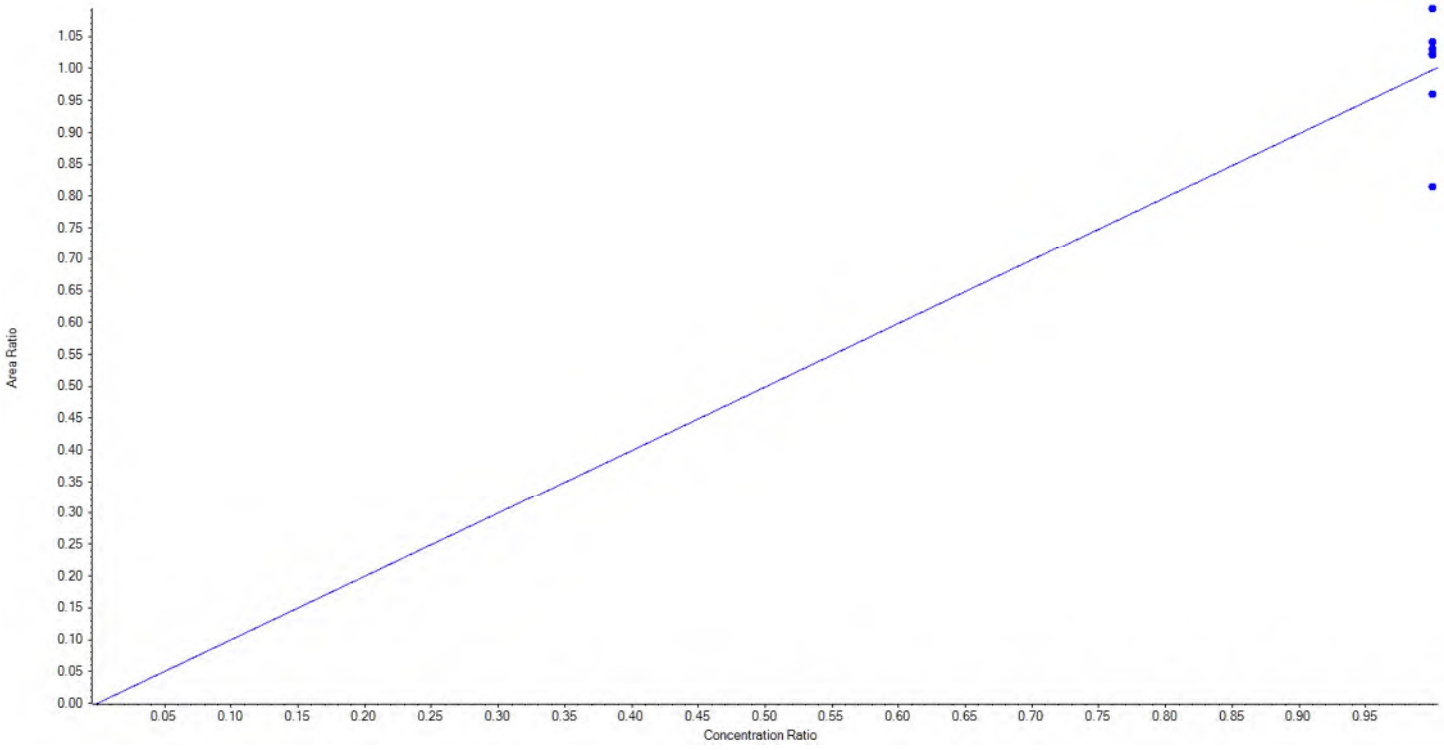
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:11:05 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | 13C6-PFDA | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 519.0 / 474.0 | **Result Table** | 18-0520_SIS |
| **Internal Standard** | 13C2-PFDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.99750 x (std. dev. = 0.08970) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 250.00 | 258.394010 | 103.4 |
| 3 | JY39 | L2 | True | 250.00 | 256.184390 | 102.5 |
| 4 | JY40 | L3 | True | 250.00 | 274.097858 | 109.6 |
| 5 | JY41 | L4 | True | 250.00 | 255.777869 | 102.3 |
| 6 | JY42 | L5 | True | 250.00 | 260.896381 | 104.4 |
| 7 | JY43 | L6 | True | 250.00 | 204.171083 | 81.7 |
| 8 | JY44 | L7 | True | 250.00 | 240.478408 | 96.2 |



BATTELLE

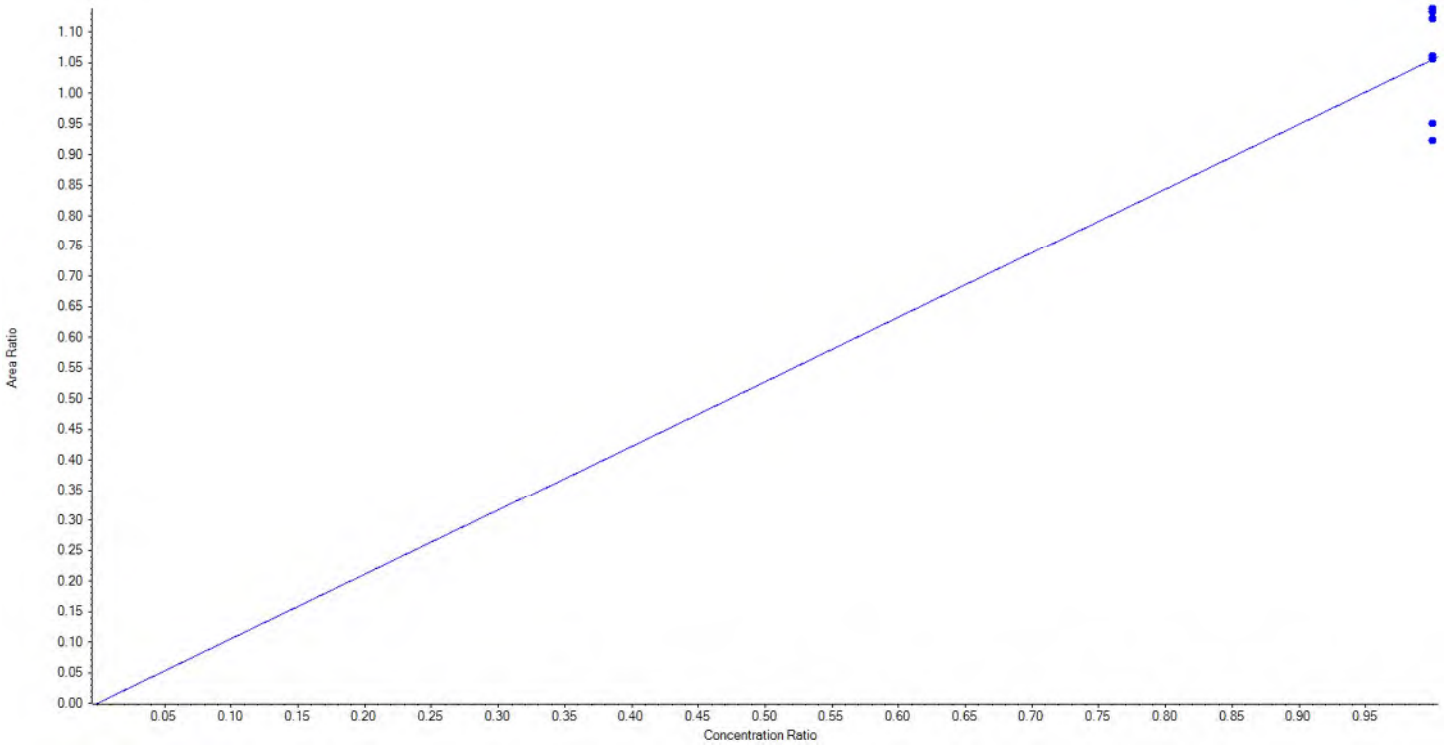
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:11:05 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | 13C7-PFUnA | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 570.0 / 525.0 | **Result Table** | 18-0520_SIS |
| **Internal Standard** | 13C2-PFDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.05476 x (std. dev. = 0.08717) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 250.00 | 268.458038 | 107.4 |
| 3 | JY39 | L2 | True | 250.00 | 250.304696 | 100.1 |
| 4 | JY40 | L3 | True | 250.00 | 269.689373 | 107.9 |
| 5 | JY41 | L4 | True | 250.00 | 265.824961 | 106.3 |
| 6 | JY42 | L5 | True | 250.00 | 251.537659 | 100.6 |
| 7 | JY43 | L6 | True | 250.00 | 218.740566 | 87.5 |
| 8 | JY44 | L7 | True | 250.00 | 225.444707 | 90.2 |



BATTELLE

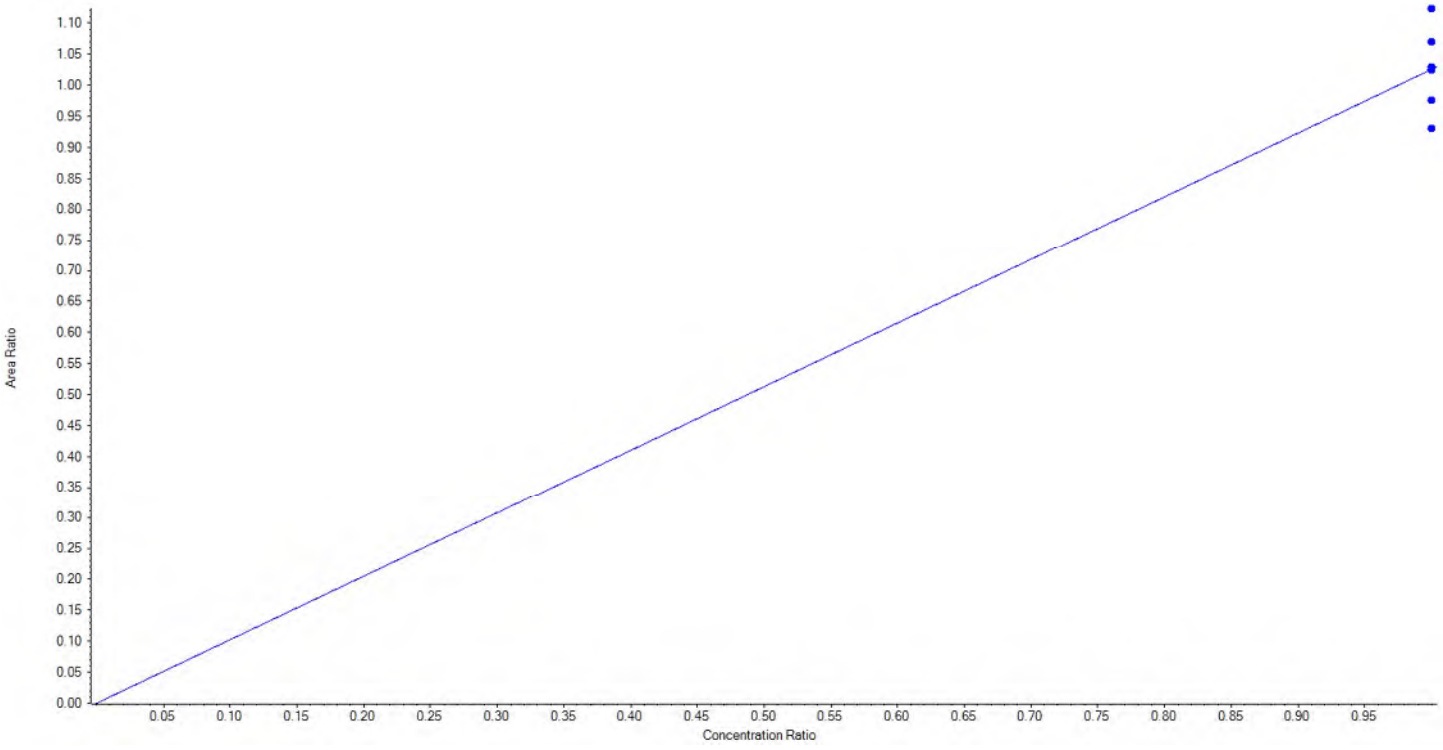
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:11:05 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | 13C2-PFTeDA | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 715.0 / 670.0 | **Result Table** | 18-0520_SIS |
| **Internal Standard** | 13C2-PFDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.02571 x (std. dev. = 0.06177) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 250.00 | 250.237589 | 100.1 |
| 3 | JY39 | L2 | True | 250.00 | 237.775971 | 95.1 |
| 4 | JY40 | L3 | True | 250.00 | 249.812083 | 99.9 |
| 5 | JY41 | L4 | True | 250.00 | 250.729332 | 100.3 |
| 6 | JY42 | L5 | True | 250.00 | 260.649072 | 104.3 |
| 7 | JY43 | L6 | True | 250.00 | 226.987549 | 90.8 |
| 8 | JY44 | L7 | True | 250.00 | 273.808403 | 109.5 |



BATTELLE

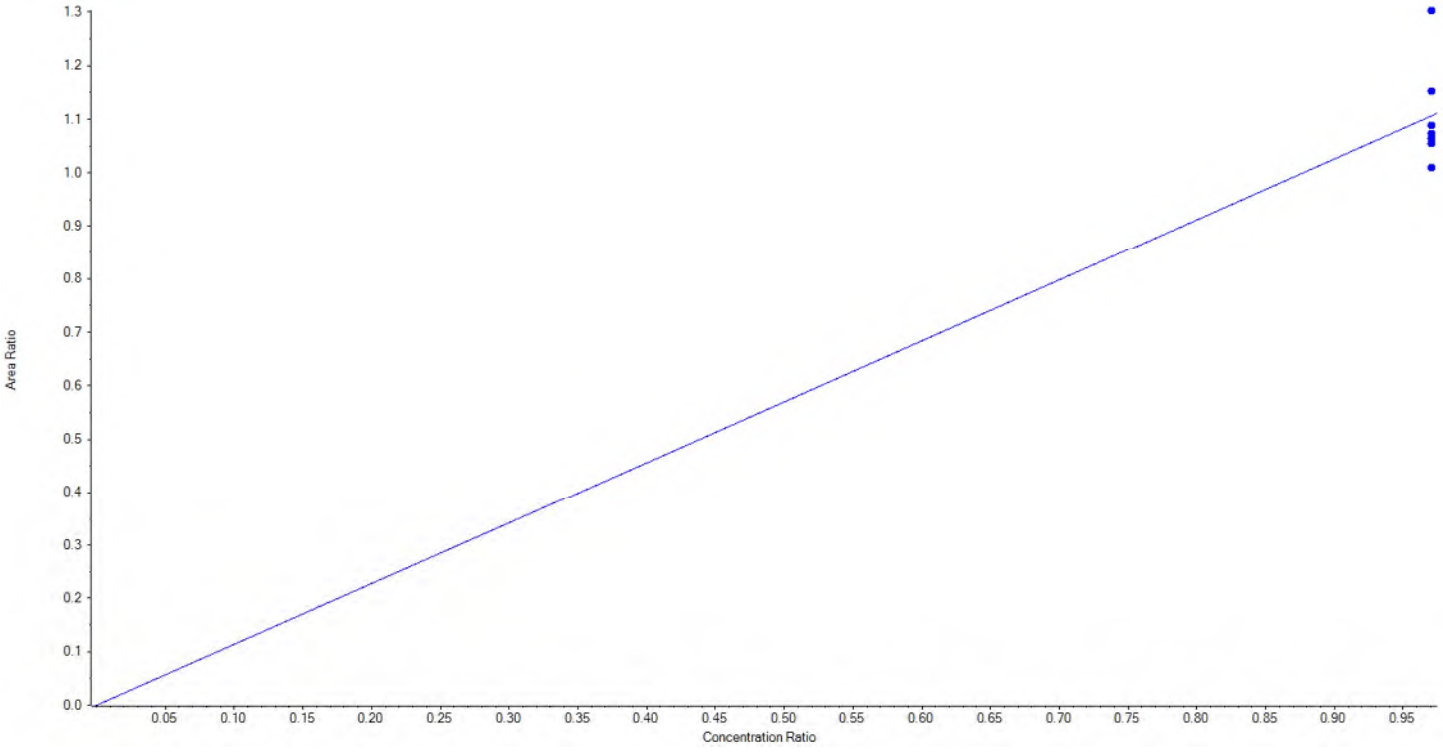
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:11:05 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | 13C3-PFBS | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 302.0 / 99.0 | **Result Table** | 18-0520_SIS |
| **Internal Standard** | 13C4-PFOS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.13968 x (std. dev. = 0.09942) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 232.25 | 221.351762 | 95.3 |
| 3 | JY39 | L2 | True | 232.25 | 228.397779 | 98.3 |
| 4 | JY40 | L3 | True | 232.25 | 223.373990 | 96.2 |
| 5 | JY41 | L4 | True | 232.25 | 225.300822 | 97.0 |
| 6 | JY42 | L5 | True | 232.25 | 241.948342 | 104.2 |
| 7 | JY43 | L6 | True | 232.25 | 211.944846 | 91.3 |
| 8 | JY44 | L7 | True | 232.25 | 273.432459 | 117.7 |



BATTELLE

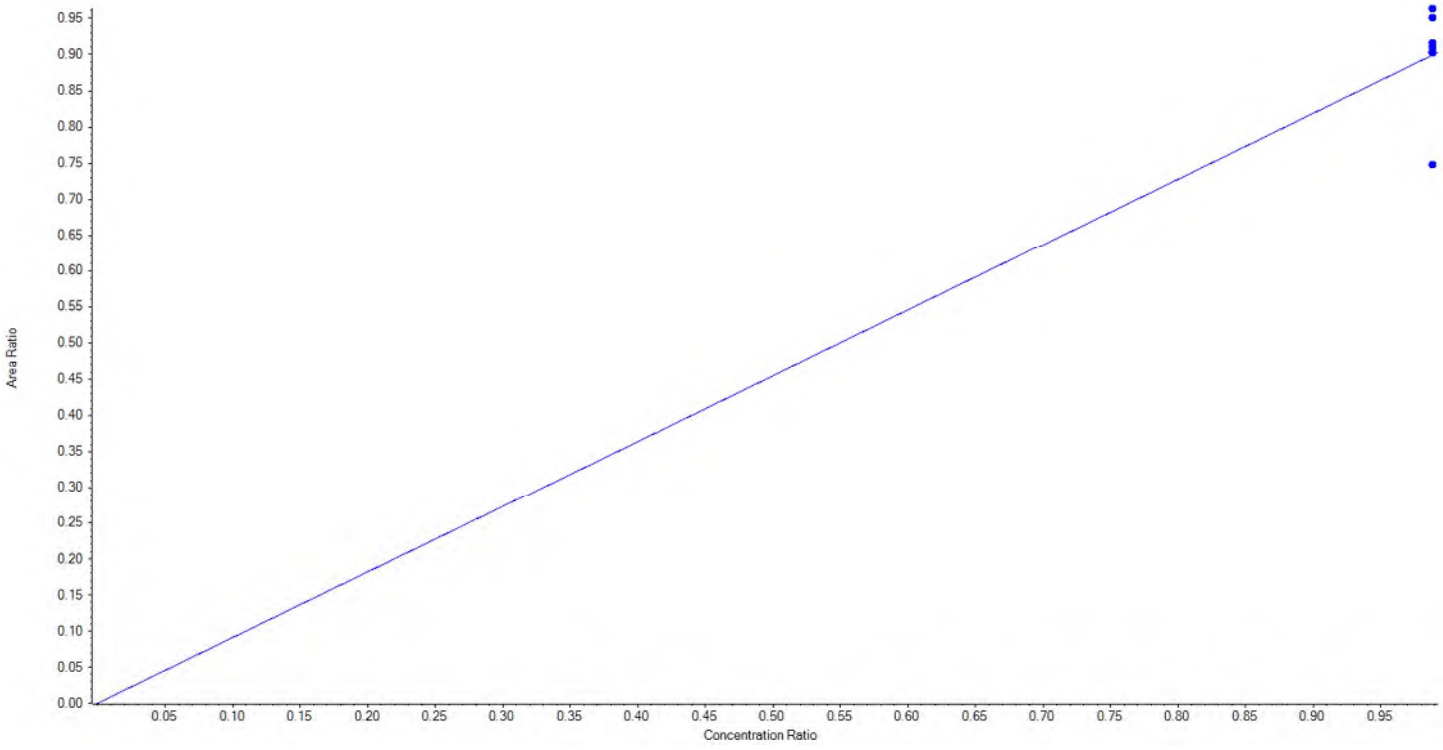
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:11:05 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | 13C3-PFHxS | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 402.0 / 99.0 | **Result Table** | 18-0520_SIS |
| **Internal Standard** | 13C4-PFOS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.90959 x (std. dev. = 0.07143) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 236.50 | 250.091901 | 105.8 |
| 3 | JY39 | L2 | True | 236.50 | 239.380330 | 101.2 |
| 4 | JY40 | L3 | True | 236.50 | 237.793450 | 100.6 |
| 5 | JY41 | L4 | True | 236.50 | 237.288278 | 100.3 |
| 6 | JY42 | L5 | True | 236.50 | 240.764048 | 101.8 |
| 7 | JY43 | L6 | True | 236.50 | 196.846714 | 83.2 |
| 8 | JY44 | L7 | True | 236.50 | 253.335280 | 107.1 |



BATTELLE

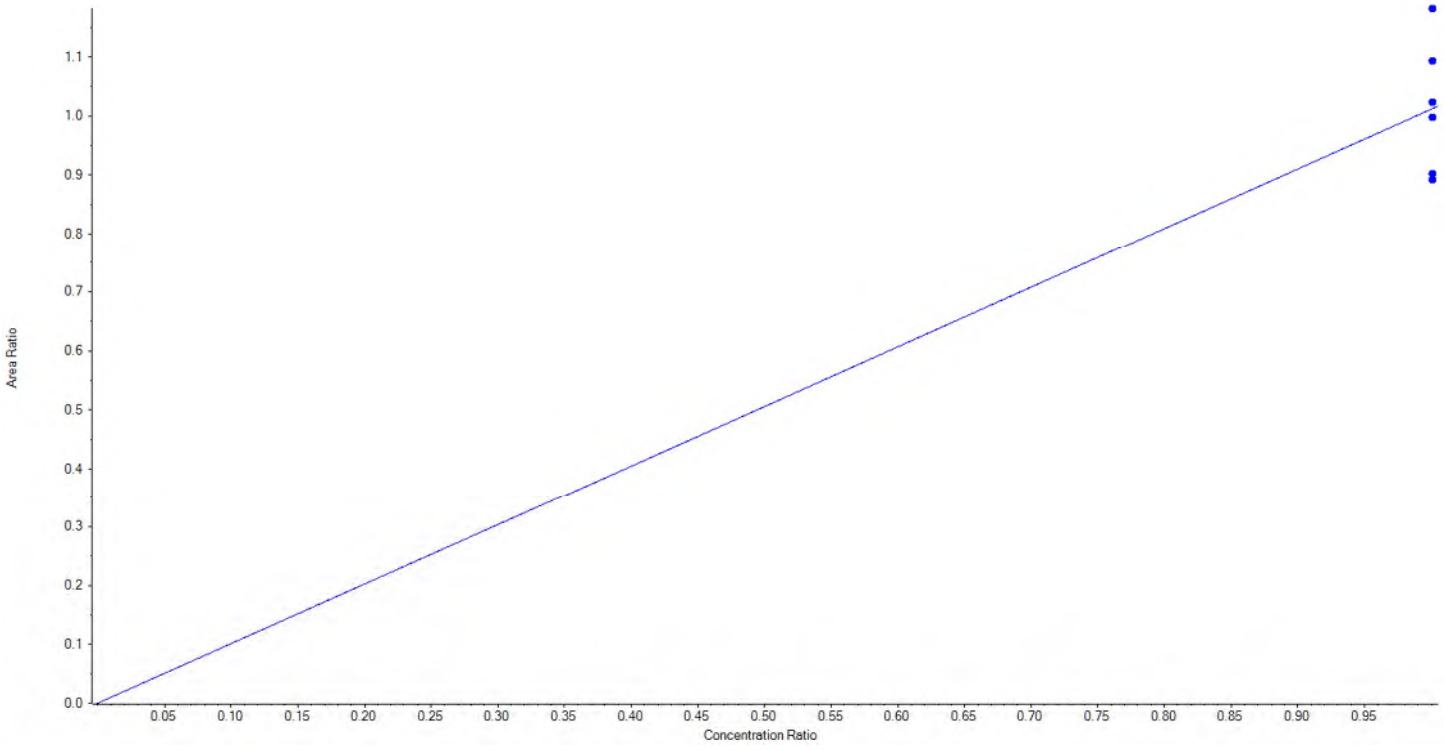
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:11:05 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | 13C8-PFOS | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 507.0 / 99.0 | **Result Table** | 18-0520_SIS |
| **Internal Standard** | 13C4-PFOS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.01129 x (std. dev. = 0.10175) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 239.50 | 241.972269 | 101.0 |
| 3 | JY39 | L2 | True | 239.50 | 235.916847 | 98.5 |
| 4 | JY40 | L3 | True | 239.50 | 236.141470 | 98.6 |
| 5 | JY41 | L4 | True | 239.50 | 210.976319 | 88.1 |
| 6 | JY42 | L5 | True | 239.50 | 279.522268 | 116.7 |
| 7 | JY43 | L6 | True | 239.50 | 213.470569 | 89.1 |
| 8 | JY44 | L7 | True | 239.50 | 258.500259 | 107.9 |



BATTELLE

| | Isotope Dilution Calibration Curve Concentrations (ng/L) | | | | | | |
|---|---|---|---|---|---|---|---|
| | JY38 | JY39 | JY40 | JY41 | JY42 | JY43 | JY44 |
| PFBA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFPeA | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| PFHxA | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| PFHpA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFOA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFNA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFDA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFUnA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFDoA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFTrDA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFTeDA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| NMeFOSAA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| NEtFOSAA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFOSA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFBS | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| PFPeS | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFHxS (Branched) | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| PFHpS | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFOS (Branched) | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFDS | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| PFNS | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| 4:2FTS | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| 6:2FTS | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| 8:2FTS | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| | Surrogates / Extracted Internal Standards | | | | | | |
| 13C4-PFBA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C5-PFPeA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C5-PFHxA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C4-PFHpA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C8-PFOA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C9-PFNA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C6-PFDA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C7-PFUnA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C2-PFDoA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C2-PFTeDA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| d3-MeFOSAA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| d5-EtFOSAA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C8-FOSA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C3-PFBS | 232.25 | 232.25 | 232.25 | 232.25 | 232.25 | 232.25 | 232.25 |
| 13C3-PFHxS | 236.50 | 236.50 | 236.50 | 236.50 | 236.50 | 236.50 | 236.50 |
| 13C8-PFOS | 239.25 | 239.25 | 239.25 | 239.25 | 239.25 | 239.25 | 239.25 |
| 13C2-4:2FTS | 233.75 | 233.75 | 233.75 | 233.75 | 233.75 | 233.75 | 233.75 |
| 13C2-6:2FTS | 237.25 | 237.25 | 237.25 | 237.25 | 237.25 | 237.25 | 237.25 |
| 13C2-8:2FTS | 239.50 | 239.50 | 239.50 | 239.50 | 239.50 | 239.50 | 239.50 |
| | Internal Standards | | | | | | |
| 13C3-PFBA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C2-PFOA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C2-PFDA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C4-PFOS | 239.25 | 239.25 | 239.25 | 239.25 | 239.25 | 239.25 | 239.25 |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:24:42 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY38 | **Injection Vial** | 2 |
| **Sample ID** | L1 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:36:54 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | 41649.85 | 118.174563 | 85.0 | false |
| PFBS_2 | 298.9 / 99.0 | 1.56 | 12872.12 | 124.006251 | 76.1 | false |
| PFHxA_1 | 313.0 / 269.0 | 1.88 | 33461.72 | 125.508479 | 16.3 | false |
| PFHxA_2 | 313.0 / 119.0 | 1.88 | 1689.26 | 109.463725 | 11.7 | false |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | 31348.10 | 182.558218 | 36.4 | true |
| PFHpA_2 | 363.0 / 169.0 | 2.28 | 671.82 | 126.607387 | 27.1 | false |
| PFHxS_1 | 399.0 / 80.0 | 2.30 | 44567.50 | 126.099371 | 95.1 | false |
| PFHxS_2 | 399.0 / 99.0 | 2.29 | 12570.96 | 125.405816 | 102.7 | false |
| PFOA_1 | 413.0 / 369.0 | 2.68 | 42579.04 | 123.488647 | 50.5 | true |
| PFOA_2 | 413.0 / 169.0 | 2.68 | 2642.72 | 115.526510 | 37.2 | false |
| PFNA_1 | 463.0 / 419.0 | 3.07 | 34370.68 | 107.015449 | 55.6 | true |
| PFNA_2 | 463.0 / 219.0 | 3.07 | 12316.25 | 107.867314 | 58.5 | false |
| PFOS_1 | 499.0 / 80.0 | 3.06 | 83724.22 | 113.148143 | 75.5 | true |
| PFOS_2 | 499.0 / 99.0 | 3.06 | 15331.11 | 117.347383 | 117.5 | false |
| PFDA_1 | 513.0 / 469.0 | 3.42 | 42400.52 | 110.198423 | 78.0 | true |
| PFDA_2 | 513.0 / 219.0 | 3.42 | 3180.08 | 114.079000 | 52.9 | false |
| PFUnA_1 | 563.0 / 519.0 | 3.74 | 43104.56 | 122.943043 | 54.1 | false |
| PFUnA_2 | 563.0 / 269.0 | 3.74 | 3704.11 | 129.206562 | 39.6 | false |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | 44814.93 | 98.610714 | 83.5 | false |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | 7054.90 | 100.020562 | 57.6 | false |
| PFTrDA_1 | 663.0 / 619.0 | 4.27 | 43195.76 | 103.989990 | 90.6 | false |
| PFTrDA_2 | 663.0 / 169.0 | 4.27 | 3035.38 | 108.287462 | 59.7 | false |
| PFTeDA_1 | 713.0 / 669.0 | 4.49 | 47536.93 | 98.523721 | 244.5 | false |
| PFTeDA_2 | 713.0 / 169.0 | 4.49 | 2324.51 | 103.942641 | 121.3 | false |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | 7224.16 | 83.446543 | 114.3 | true |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | 4499.33 | 94.256719 | 81.5 | false |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | 8030.73 | 127.151255 | 177.4 | false |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.74 | 660.85 | 236.281227 | 47.5 | true |
| PFBA | 213.0 / 169.0 | 1.17 | 226226.69 | 123.865780 | 192.6 | true |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:24:47 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY39 | **Injection Vial** | 3 |
| **Sample ID** | L2 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:47:47 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | 103246.53 | 254.441490 | 163.1 | false |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 29864.10 | 251.390877 | 125.6 | false |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 71060.58 | 243.109429 | 29.4 | false |
| PFHxA_2 | 313.0 / 119.0 | 1.87 | 5638.12 | 269.034709 | 27.0 | false |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | 67995.37 | 289.794362 | 56.6 | false |
| PFHpA_2 | 363.0 / 169.0 | 2.26 | 1778.67 | 291.760656 | 51.1 | false |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | 101506.53 | 246.750083 | 131.9 | false |
| PFHxS_2 | 399.0 / 99.0 | 2.29 | 27525.16 | 238.832101 | 173.3 | false |
| PFOA_1 | 413.0 / 369.0 | 2.67 | 98458.75 | 251.671145 | 89.4 | true |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 5943.93 | 236.072750 | 76.5 | false |
| PFNA_1 | 463.0 / 419.0 | 3.06 | 95256.94 | 278.560077 | 117.1 | true |
| PFNA_2 | 463.0 / 219.0 | 3.06 | 27560.41 | 253.733268 | 107.7 | false |
| PFOS_1 | 499.0 / 80.0 | 3.06 | 155084.29 | 233.073775 | 93.2 | true |
| PFOS_2 | 499.0 / 99.0 | 3.06 | 25677.64 | 217.248927 | 161.7 | false |
| PFDA_1 | 513.0 / 469.0 | 3.41 | 103304.88 | 231.107869 | 145.6 | true |
| PFDA_2 | 513.0 / 219.0 | 3.42 | 6726.68 | 275.419951 | 96.9 | false |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | 107778.50 | 246.726851 | 87.9 | false |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | 6544.92 | 241.347698 | 66.6 | true |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | 105680.00 | 233.920658 | 136.4 | false |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | 18069.50 | 250.671630 | 125.7 | false |
| PFTrDA_1 | 663.0 / 619.0 | 4.26 | 99682.92 | 237.901063 | 171.2 | false |
| PFTrDA_2 | 663.0 / 169.0 | 4.26 | 6805.60 | 250.336593 | 111.2 | false |
| PFTeDA_1 | 713.0 / 669.0 | 4.49 | 118627.90 | 248.858327 | 364.4 | false |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | 5496.50 | 243.654642 | 172.6 | false |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | 17705.28 | 244.399054 | 377.7 | true |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | 9203.85 | 226.726746 | 156.3 | false |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | 19253.19 | 265.679934 | 332.3 | false |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | 1068.59 | 319.753372 | 42.7 | false |
| PFBA | 213.0 / 169.0 | 1.17 | 264955.26 | 212.658218 | 215.3 | true |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:24:55 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY40 | **Injection Vial** | 4 |
| **Sample ID** | L3 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:58:41 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | 193288.81 | 456.707111 | 221.8 | false |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 57080.68 | 457.925956 | 168.2 | false |
| PFHxA_1 | 313.0 / 269.0 | 1.87 | 150699.11 | 464.496945 | 40.7 | false |
| PFHxA_2 | 313.0 / 119.0 | 1.87 | 12404.87 | 518.403953 | 41.9 | false |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | 144122.44 | 491.393934 | 82.0 | false |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | 2705.11 | 417.285946 | 76.4 | false |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | 207299.32 | 455.053362 | 171.7 | false |
| PFHxS_2 | 399.0 / 99.0 | 2.29 | 59474.77 | 462.800440 | 231.9 | false |
| PFOA_1 | 413.0 / 369.0 | 2.67 | 197401.68 | 458.269834 | 167.3 | true |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 13248.34 | 478.820620 | 121.7 | false |
| PFNA_1 | 463.0 / 419.0 | 3.06 | 177694.25 | 464.832649 | 167.8 | true |
| PFNA_2 | 463.0 / 219.0 | 3.06 | 59245.56 | 495.088887 | 185.9 | false |
| PFOS_1 | 499.0 / 80.0 | 3.06 | 313396.96 | 479.111009 | 155.7 | true |
| PFOS_2 | 499.0 / 99.0 | 3.06 | 55535.36 | 477.582506 | 310.0 | false |
| PFDA_1 | 513.0 / 469.0 | 3.41 | 225205.85 | 470.043896 | 223.3 | true |
| PFDA_2 | 513.0 / 219.0 | 3.42 | 10813.82 | 457.576231 | 146.9 | false |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | 229056.85 | 463.660604 | 130.5 | false |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | 12842.78 | 467.242328 | 100.3 | true |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | 210586.05 | 475.852120 | 169.0 | false |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | 33790.53 | 475.157931 | 157.1 | false |
| PFTrDA_1 | 663.0 / 619.0 | 4.26 | 214300.23 | 506.941023 | 221.2 | false |
| PFTrDA_2 | 663.0 / 169.0 | 4.26 | 12771.24 | 472.911739 | 178.3 | false |
| PFTeDA_1 | 713.0 / 669.0 | 4.48 | 233745.27 | 490.541916 | 390.4 | false |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | 11347.68 | 499.075940 | 282.1 | false |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | 34228.88 | 483.064727 | 337.1 | false |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | 19867.20 | 502.520187 | 268.8 | false |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | 36544.99 | 423.940233 | 481.1 | false |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | 1955.63 | 443.979478 | 87.6 | false |
| PFBA | 213.0 / 169.0 | 1.17 | 394446.21 | 458.648283 | 341.4 | true |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:25:08 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY41 | **Injection Vial** | 5 |
| **Sample ID** | L4 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:09:34 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | 435495.04 | 973.620829 | 326.2 | false |
| PFBS_2 | 298.9 / 99.0 | 1.56 | 123090.43 | 933.624261 | 251.1 | false |
| PFHxA_1 | 313.0 / 269.0 | 1.87 | 337159.59 | 916.327219 | 66.2 | false |
| PFHxA_2 | 313.0 / 119.0 | 1.87 | 22835.64 | 839.466188 | 64.5 | false |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | 314924.78 | 980.976708 | 142.0 | false |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | 5919.45 | 896.485634 | 104.1 | false |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | 451134.33 | 928.278420 | 244.2 | false |
| PFHxS_2 | 399.0 / 99.0 | 2.29 | 127704.10 | 934.199524 | 280.5 | false |
| PFOA_1 | 413.0 / 369.0 | 2.67 | 416738.53 | 955.748778 | 285.2 | true |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 27996.35 | 1009.636830 | 187.3 | false |
| PFNA_1 | 463.0 / 419.0 | 3.06 | 386253.44 | 927.907689 | 278.0 | true |
| PFNA_2 | 463.0 / 219.0 | 3.06 | 120991.07 | 944.716102 | 266.6 | false |
| PFOS_1 | 499.0 / 80.0 | 3.06 | 637726.68 | 1072.470671 | 209.1 | true |
| PFOS_2 | 499.0 / 99.0 | 3.06 | 115535.53 | 1091.956540 | 415.8 | false |
| PFDA_1 | 513.0 / 469.0 | 3.42 | 481757.48 | 1035.018294 | 395.6 | true |
| PFDA_2 | 513.0 / 219.0 | 3.41 | 20199.76 | 940.050222 | 202.6 | false |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | 477965.96 | 919.395673 | 223.4 | false |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | 26437.74 | 968.076678 | 140.0 | true |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | 456783.23 | 1032.761138 | 218.0 | false |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | 73642.16 | 1031.153986 | 225.7 | false |
| PFTrDA_1 | 663.0 / 619.0 | 4.27 | 427536.28 | 989.873487 | 296.5 | false |
| PFTrDA_2 | 663.0 / 169.0 | 4.27 | 25724.32 | 938.882600 | 229.5 | false |
| PFTeDA_1 | 713.0 / 669.0 | 4.49 | 491133.71 | 1012.450240 | 549.8 | false |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | 23092.54 | 993.942996 | 355.9 | false |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | 79808.75 | 1097.700385 | 893.7 | false |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | 43375.34 | 1068.138462 | 320.6 | false |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | 80775.32 | 937.778212 | 683.5 | false |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | 4930.74 | 974.254801 | 601.2 | false |
| PFBA | 213.0 / 169.0 | 1.17 | 711122.82 | 1010.839022 | 385.5 | true |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:25:14 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY42 | **Injection Vial** | 6 |
| **Sample ID** | L5 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:20:26 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | 1151128.03 | 2311.981236 | 595.1 | false |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 336525.31 | 2287.352093 | 444.5 | false |
| PFHxA_1 | 313.0 / 269.0 | 1.87 | 914456.15 | 2407.633843 | 136.0 | false |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 70167.85 | 2458.325809 | 119.9 | false |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | 856331.77 | 2245.594351 | 252.4 | false |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | 15771.47 | 2090.680566 | 164.4 | false |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | 1199797.73 | 2316.855490 | 389.7 | false |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | 345898.05 | 2375.949764 | 848.5 | false |
| PFOA_1 | 413.0 / 369.0 | 2.67 | 1134944.64 | 2280.876737 | 390.1 | true |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 76078.28 | 2417.165222 | 436.2 | false |
| PFNA_1 | 463.0 / 419.0 | 3.06 | 1050546.15 | 2371.276802 | 476.8 | true |
| PFNA_2 | 463.0 / 219.0 | 3.06 | 317090.93 | 2348.525773 | 454.1 | false |
| PFOS_1 | 499.0 / 80.0 | 3.06 | 1755309.67 | 2205.334880 | 291.7 | true |
| PFOS_2 | 499.0 / 99.0 | 3.06 | 310347.72 | 2190.256613 | 700.5 | false |
| PFDA_1 | 513.0 / 469.0 | 3.41 | 1233199.14 | 2432.445932 | 569.5 | true |
| PFDA_2 | 513.0 / 219.0 | 3.41 | 48233.14 | 2132.114826 | 208.8 | false |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | 1268044.53 | 2369.453411 | 323.4 | false |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | 58622.01 | 2157.204163 | 212.2 | true |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | 1296301.87 | 2688.000463 | 326.6 | false |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | 196020.75 | 2511.466237 | 316.0 | false |
| PFTrDA_1 | 663.0 / 619.0 | 4.27 | 1164491.82 | 2452.401261 | 508.2 | false |
| PFTrDA_2 | 663.0 / 169.0 | 4.26 | 75669.28 | 2523.167722 | 360.3 | false |
| PFTeDA_1 | 713.0 / 669.0 | 4.48 | 1351478.94 | 2540.117327 | 811.6 | false |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | 62212.25 | 2435.881968 | 577.4 | false |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | 211546.26 | 2838.922966 | 977.8 | false |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | 115076.60 | 2765.525131 | 736.4 | false |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | 223779.17 | 2212.318765 | 806.5 | false |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | 13782.19 | 2197.277628 | 346.1 | false |
| PFBA | 213.0 / 169.0 | 1.16 | 1559351.55 | 2469.015087 | 495.0 | true |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:25:22 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY43 | **Injection Vial** | 7 |
| **Sample ID** | L6 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:31:18 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | 4722904.78 | 10594.642449 | 1147.7 | false |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 1392113.94 | 10559.938920 | 893.9 | false |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 3568740.58 | 10145.632957 | 313.9 | false |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 273369.19 | 10293.584410 | 300.5 | false |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | 3308188.41 | 9334.164109 | 474.7 | false |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | 64942.59 | 9463.895250 | 480.6 | false |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | 4577214.25 | 10517.109004 | 848.3 | false |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | 1277716.04 | 10452.350229 | 1330.6 | false |
| PFOA_1 | 413.0 / 369.0 | 2.67 | 4155443.58 | 9195.851434 | 833.3 | true |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 263105.48 | 9233.216753 | 720.2 | false |
| PFNA_1 | 463.0 / 419.0 | 3.06 | 3907197.52 | 9990.022487 | 920.1 | true |
| PFNA_2 | 463.0 / 219.0 | 3.06 | 1239288.32 | 10441.723314 | 976.5 | false |
| PFOS_1 | 499.0 / 80.0 | 3.06 | 6368149.04 | 10221.075140 | 523.8 | true |
| PFOS_2 | 499.0 / 99.0 | 3.06 | 1157242.10 | 10430.517196 | 1147.6 | false |
| PFDA_1 | 513.0 / 469.0 | 3.41 | 4455092.59 | 10438.811237 | 651.0 | true |
| PFDA_2 | 513.0 / 219.0 | 3.41 | 196948.16 | 10558.871916 | 535.1 | false |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | 4819181.12 | 9555.457961 | 587.2 | false |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | 230697.64 | 9155.089249 | 410.2 | false |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | 4846323.85 | 10550.038320 | 544.6 | false |
| PFDoA_2 | 613.0 / 319.0 | 4.01 | 762283.61 | 10239.500617 | 471.2 | false |
| PFTrDA_1 | 663.0 / 619.0 | 4.26 | 4607652.47 | 10416.702985 | 713.4 | false |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | 289339.48 | 10379.703023 | 724.6 | false |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | 5066779.77 | 10235.461016 | 1389.1 | false |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | 245444.68 | 10316.645427 | 986.0 | false |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.56 | 836072.04 | 10168.320127 | 1408.9 | false |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.56 | 446714.30 | 9729.906041 | 1087.5 | false |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | 822149.74 | 9520.499075 | 1213.9 | false |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | 51283.90 | 9282.499347 | 484.6 | false |
| PFBA | 213.0 / 169.0 | 1.16 | 5400203.01 | 9824.380506 | 1067.0 | true |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:25:29 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY44 | **Injection Vial** | 8 |
| **Sample ID** | L7 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:42:11 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | 10092400.92 | 19983.932322 | 1629.2 | false |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 2999136.08 | 20079.261643 | 1109.4 | false |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 7797350.83 | 20390.791129 | 393.9 | false |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 583740.94 | 20205.221206 | 395.6 | false |
| PFHpA_1 | 363.0 / 319.0 | 2.26 | 6920691.34 | 20908.076537 | 670.1 | false |
| PFHpA_2 | 363.0 / 169.0 | 2.26 | 134460.94 | 21063.284561 | 641.5 | false |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | 9895755.88 | 20103.354269 | 887.9 | false |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | 2779515.13 | 20103.962127 | 1126.4 | false |
| PFOA_1 | 413.0 / 369.0 | 2.66 | 8864391.34 | 21084.093425 | 1550.8 | true |
| PFOA_2 | 413.0 / 169.0 | 2.66 | 552786.63 | 20859.561314 | 889.2 | false |
| PFNA_1 | 463.0 / 419.0 | 3.05 | 8519144.49 | 20210.384848 | 1266.7 | true |
| PFNA_2 | 463.0 / 219.0 | 3.05 | 2525457.60 | 19758.345342 | 1156.0 | false |
| PFOS_1 | 499.0 / 80.0 | 3.04 | 13254305.14 | 20025.786383 | 419.5 | true |
| PFOS_2 | 499.0 / 99.0 | 3.04 | 2336719.24 | 19825.090835 | 1088.5 | false |
| PFDA_1 | 513.0 / 469.0 | 3.40 | 9064512.14 | 19632.374349 | 812.0 | true |
| PFDA_2 | 513.0 / 219.0 | 3.40 | 399937.08 | 19871.887855 | 536.5 | false |
| PFUnA_1 | 563.0 / 519.0 | 3.72 | 9885099.15 | 20672.362456 | 787.7 | false |
| PFUnA_2 | 563.0 / 269.0 | 3.72 | 505827.71 | 21231.833322 | 474.3 | false |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | 9534710.25 | 19270.816586 | 808.0 | false |
| PFDoA_2 | 613.0 / 319.0 | 4.00 | 1583325.10 | 19742.029037 | 766.3 | false |
| PFTrDA_1 | 663.0 / 619.0 | 4.25 | 9618909.65 | 19642.190190 | 1080.0 | false |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | 607046.90 | 19676.710861 | 866.0 | false |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | 10807688.71 | 19724.047452 | 1763.5 | false |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | 520379.78 | 19756.856386 | 1294.5 | false |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.55 | 1653167.25 | 19434.146196 | 1149.3 | false |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.55 | 948142.22 | 19962.926715 | 1394.2 | false |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.72 | 1650549.79 | 20862.632526 | 1264.2 | false |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.72 | 107026.84 | 21032.235373 | 697.8 | false |
| PFBA | 213.0 / 169.0 | 1.16 | 11441448.10 | 20250.593105 | 1371.6 | true |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:11:58 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY38 | **Injection Vial** | 2 |
| **Sample ID** | L1 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:36:54 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.17 | 95543.41 | 263.706951 | 1396.2 | false |
| 13C2-PFDoA | 615.0 / 570.0 | 4.01 | 121558.79 | 259.030708 | 854.2 | false |
| d3-MeFOSAA | 573.0 / 419.0 | 3.57 | 18593.51 | 240.622830 | 155.5 | false |
| d5-EtFOSAA | 589.0 / 419.0 | 3.73 | 21600.05 | 245.891395 | 202.2 | false |
| 13C5-PFHxA | 318.0 / 273.0 | 1.86 | 77959.28 | 245.578330 | 487.3 | false |
| 13C4-PFHpA | 367.0 / 322.0 | 2.26 | 90262.77 | 256.566788 | 629.3 | false |
| 13C8-PFOA | 421.0 / 376.0 | 2.67 | 106825.04 | 274.833039 | 3235.7 | false |
| 13C9-PFNA | 472.0 / 427.0 | 3.06 | 103312.76 | 264.071238 | 904.7 | false |
| 13C6-PFDA | 519.0 / 474.0 | 3.41 | 104855.93 | 258.394010 | 613.6 | false |
| 13C7-PFUnA | 570.0 / 525.0 | 3.72 | 115193.55 | 268.458038 | 953.1 | false |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.48 | 104417.85 | 250.237589 | 1525.7 | false |
| 13C3-PFBS | 302.0 / 99.0 | 1.54 | 34980.72 | 221.351762 | 663.2 | false |
| 13C3-PFHxS | 402.0 / 99.0 | 2.28 | 31543.31 | 250.091901 | 295.3 | false |
| 13C8-PFOS | 507.0 / 99.0 | 3.05 | 33931.33 | 241.972269 | 213.0 | false |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:12:04 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY39 | **Injection Vial** | 3 |
| **Sample ID** | L2 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:47:47 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.17 | 92104.27 | 258.296214 | 1413.1 | false |
| 13C2-PFDoA | 615.0 / 570.0 | 4.01 | 118292.59 | 244.929132 | 970.6 | false |
| d3-MeFOSAA | 573.0 / 419.0 | 3.56 | 16828.42 | 231.485404 | 156.1 | false |
| d5-EtFOSAA | 589.0 / 419.0 | 3.72 | 19802.95 | 239.620284 | 166.6 | false |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 73872.08 | 230.912320 | 509.1 | false |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 86696.39 | 244.532935 | 916.1 | false |
| 13C8-PFOA | 421.0 / 376.0 | 2.66 | 97424.27 | 248.718208 | 1025.8 | false |
| 13C9-PFNA | 472.0 / 427.0 | 3.05 | 90045.86 | 228.389124 | 1121.3 | false |
| 13C6-PFDA | 519.0 / 474.0 | 3.40 | 106990.49 | 256.184390 | 908.2 | false |
| 13C7-PFUnA | 570.0 / 525.0 | 3.72 | 110535.74 | 250.304696 | 571.6 | false |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.48 | 102110.90 | 237.775971 | 1774.0 | false |
| 13C3-PFBS | 302.0 / 99.0 | 1.54 | 33957.26 | 228.397779 | 551.0 | false |
| 13C3-PFHxS | 402.0 / 99.0 | 2.28 | 28404.76 | 239.380330 | 321.2 | false |
| 13C8-PFOS | 507.0 / 99.0 | 3.04 | 31123.56 | 235.916847 | 198.6 | false |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:12:15 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY40 | **Injection Vial** | 4 |
| **Sample ID** | L3 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:58:41 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.17 | 91805.61 | 245.137022 | 1839.3 | false |
| 13C2-PFDoA | 615.0 / 570.0 | 4.01 | 114977.10 | 251.034787 | 926.2 | false |
| d3-MeFOSAA | 573.0 / 419.0 | 3.56 | 16811.19 | 229.902068 | 139.7 | false |
| d5-EtFOSAA | 589.0 / 419.0 | 3.72 | 22038.82 | 265.122265 | 215.1 | false |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 76699.30 | 248.137717 | 543.4 | false |
| 13C4-PFHpA | 367.0 / 322.0 | 2.26 | 87153.57 | 254.422857 | 827.8 | false |
| 13C8-PFOA | 421.0 / 376.0 | 2.66 | 98005.51 | 258.955725 | 835.4 | false |
| 13C9-PFNA | 472.0 / 427.0 | 3.05 | 96294.65 | 252.783354 | 1043.1 | false |
| 13C6-PFDA | 519.0 / 474.0 | 3.40 | 108557.17 | 274.097858 | 1741.3 | false |
| 13C7-PFUnA | 570.0 / 525.0 | 3.72 | 112942.63 | 269.689373 | 924.6 | false |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.48 | 101736.77 | 249.812083 | 1514.6 | false |
| 13C3-PFBS | 302.0 / 99.0 | 1.54 | 33404.82 | 223.373990 | 572.6 | false |
| 13C3-PFHxS | 402.0 / 99.0 | 2.28 | 28381.69 | 237.793450 | 345.9 | false |
| 13C8-PFOS | 507.0 / 99.0 | 3.04 | 31335.63 | 236.141470 | 209.7 | false |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:12:20 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY41 | **Injection Vial** | 5 |
| **Sample ID** | L4 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:09:34 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.17 | 93269.26 | 247.884907 | 1533.0 | false |
| 13C2-PFDoA | 615.0 / 570.0 | 4.01 | 114449.09 | 246.787054 | 980.2 | false |
| d3-MeFOSAA | 573.0 / 419.0 | 3.56 | 17463.24 | 236.565126 | 124.0 | false |
| d5-EtFOSAA | 589.0 / 419.0 | 3.72 | 20789.36 | 247.730920 | 198.5 | false |
| 13C5-PFHxA | 318.0 / 273.0 | 1.86 | 84047.21 | 264.228232 | 620.7 | false |
| 13C4-PFHpA | 367.0 / 322.0 | 2.26 | 85380.36 | 242.205202 | 846.0 | false |
| 13C8-PFOA | 421.0 / 376.0 | 2.66 | 94467.78 | 242.556696 | 1362.9 | false |
| 13C9-PFNA | 472.0 / 427.0 | 3.05 | 101567.70 | 259.093464 | 1081.5 | false |
| 13C6-PFDA | 519.0 / 474.0 | 3.40 | 102571.89 | 255.777869 | 665.8 | false |
| 13C7-PFUnA | 570.0 / 525.0 | 3.72 | 112720.36 | 265.824961 | 837.0 | false |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.48 | 103390.87 | 250.729332 | 1269.1 | false |
| 13C3-PFBS | 302.0 / 99.0 | 1.54 | 34014.03 | 225.300822 | 532.6 | false |
| 13C3-PFHxS | 402.0 / 99.0 | 2.28 | 28591.27 | 237.288278 | 426.9 | false |
| 13C8-PFOS | 507.0 / 99.0 | 3.05 | 28263.02 | 210.976319 | 210.4 | false |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:12:31 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY42 | **Injection Vial** | 6 |
| **Sample ID** | L5 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:20:26 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.17 | 96708.07 | 239.575462 | 1313.0 | false |
| 13C2-PFDoA | 615.0 / 570.0 | 4.01 | 124526.00 | 254.752203 | 1150.1 | false |
| d3-MeFOSAA | 573.0 / 419.0 | 3.56 | 18005.76 | 239.715946 | 173.1 | false |
| d5-EtFOSAA | 589.0 / 419.0 | 3.72 | 23781.37 | 278.506795 | 198.8 | false |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 84931.23 | 259.099772 | 529.2 | false |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 95292.73 | 262.318521 | 659.8 | false |
| 13C8-PFOA | 421.0 / 376.0 | 2.66 | 105997.11 | 264.099346 | 927.9 | false |
| 13C9-PFNA | 472.0 / 427.0 | 3.05 | 106066.51 | 262.556550 | 1835.3 | false |
| 13C6-PFDA | 519.0 / 474.0 | 3.40 | 110277.16 | 260.896381 | 997.8 | false |
| 13C7-PFUnA | 570.0 / 525.0 | 3.72 | 112424.70 | 251.537659 | 611.4 | false |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.48 | 113288.38 | 260.649072 | 1327.5 | false |
| 13C3-PFBS | 302.0 / 99.0 | 1.54 | 37167.05 | 241.948342 | 560.9 | false |
| 13C3-PFHxS | 402.0 / 99.0 | 2.28 | 29518.14 | 240.764048 | 328.8 | false |
| 13C8-PFOS | 507.0 / 99.0 | 3.04 | 38101.45 | 279.522268 | 203.0 | false |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:12:37 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY43 | **Injection Vial** | 7 |
| **Sample ID** | L6 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:31:18 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.17 | 91051.66 | 238.595520 | 1610.0 | false |
| 13C2-PFDoA | 615.0 / 570.0 | 4.00 | 118499.11 | 227.018868 | 1026.3 | false |
| d3-MeFOSAA | 573.0 / 419.0 | 3.56 | 19922.38 | 262.212753 | 124.0 | false |
| d5-EtFOSAA | 589.0 / 419.0 | 3.72 | 20010.07 | 231.672410 | 142.8 | false |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 77887.15 | 239.714839 | 636.2 | false |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 86123.67 | 239.178000 | 758.9 | false |
| 13C8-PFOA | 421.0 / 376.0 | 2.66 | 95209.01 | 239.321013 | 1091.6 | false |
| 13C9-PFNA | 472.0 / 427.0 | 3.04 | 92781.11 | 231.704047 | 1558.6 | false |
| 13C6-PFDA | 519.0 / 474.0 | 3.40 | 92155.82 | 204.171083 | 793.2 | false |
| 13C7-PFUnA | 570.0 / 525.0 | 3.71 | 104399.66 | 218.740566 | 758.3 | false |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.47 | 105351.86 | 226.987549 | 1311.4 | false |
| 13C3-PFBS | 302.0 / 99.0 | 1.54 | 32933.01 | 211.944846 | 628.3 | false |
| 13C3-PFHxS | 402.0 / 99.0 | 2.27 | 24411.73 | 196.846714 | 371.2 | false |
| 13C8-PFOS | 507.0 / 99.0 | 3.04 | 29433.11 | 213.470569 | 186.0 | false |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:12:43 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY44 | **Injection Vial** | 8 |
| **Sample ID** | L7 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:42:11 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.16 | 94281.51 | 256.803925 | 1559.4 | false |
| 13C2-PFDoA | 615.0 / 570.0 | 3.99 | 127613.93 | 266.447249 | 1009.2 | false |
| d3-MeFOSAA | 573.0 / 419.0 | 3.55 | 20621.38 | 309.495872 | 103.1 | false |
| d5-EtFOSAA | 589.0 / 419.0 | 3.71 | 18288.89 | 241.455931 | 128.2 | false |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 84543.45 | 262.328791 | 661.1 | false |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 89567.38 | 250.775698 | 590.7 | false |
| 13C8-PFOA | 421.0 / 376.0 | 2.65 | 87410.86 | 221.515973 | 5863.8 | false |
| 13C9-PFNA | 472.0 / 427.0 | 3.03 | 99852.33 | 251.402222 | 1376.2 | false |
| 13C6-PFDA | 519.0 / 474.0 | 3.38 | 99595.19 | 240.478408 | 903.1 | false |
| 13C7-PFUnA | 570.0 / 525.0 | 3.71 | 98728.73 | 225.444707 | 696.7 | false |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.46 | 116605.95 | 273.808403 | 1262.7 | false |
| 13C3-PFBS | 302.0 / 99.0 | 1.53 | 37259.25 | 273.432459 | 816.4 | false |
| 13C3-PFHxS | 402.0 / 99.0 | 2.27 | 27551.26 | 253.335280 | 321.2 | false |
| 13C8-PFOS | 507.0 / 99.0 | 3.03 | 31256.08 | 258.500259 | 214.6 | false |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/08/2018 2:26:02 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY38 | **Injection Vial** | 2 |
| **Sample ID** | L1 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:36:54 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.56 | PFBS | 0.309 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.88 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.88 | PFHxA | 0.051 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.28 | PFHpA | 0.021 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.30 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.29 | PFHxS | 0.282 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.68 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.68 | PFOA | 0.062 | 0.064 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.07 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.07 | PFNA | 0.358 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.06 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.06 | PFOS | 0.183 | 0.177 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.42 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.42 | PFDA | 0.075 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.74 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.74 | PFUnA | 0.086 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | PFDoA | 0.157 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.27 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.27 | PFTrDA | 0.070 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.49 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.49 | PFTeDA | 0.049 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | NMeFOSAA | 0.623 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.74 | NEtFOSAA | 0.082 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.17 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/08/2018 2:26:10 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY39 | **Injection Vial** | 3 |
| **Sample ID** | L2 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:47:47 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.55 | PFBS | 0.289 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.87 | PFHxA | 0.079 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.26 | PFHpA | 0.026 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.29 | PFHxS | 0.271 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.67 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.67 | PFOA | 0.060 | 0.064 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.06 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.06 | PFNA | 0.289 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.06 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.06 | PFOS | 0.166 | 0.177 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.41 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.42 | PFDA | 0.065 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | PFUnA | 0.061 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | PFDoA | 0.171 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.26 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.26 | PFTrDA | 0.068 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.49 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | PFTeDA | 0.046 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | NMeFOSAA | 0.520 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | NEtFOSAA | 0.056 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.17 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/08/2018 2:26:15 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY40 | **Injection Vial** | 4 |
| **Sample ID** | L3 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:58:41 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.55 | PFBS | 0.295 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.87 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.87 | PFHxA | 0.082 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | PFHpA | 0.019 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.29 | PFHxS | 0.287 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.67 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.67 | PFOA | 0.067 | 0.064 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.06 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.06 | PFNA | 0.333 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.06 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.06 | PFOS | 0.177 | 0.177 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.41 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.42 | PFDA | 0.048 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | PFUnA | 0.056 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | PFDoA | 0.161 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.26 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.26 | PFTrDA | 0.060 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.48 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | PFTeDA | 0.049 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | NMeFOSAA | 0.580 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | NEtFOSAA | 0.054 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.17 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/08/2018 2:26:21 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY41 | **Injection Vial** | 5 |
| **Sample ID** | L4 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:09:34 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.56 | PFBS | 0.283 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.87 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.87 | PFHxA | 0.068 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | PFHpA | 0.019 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.29 | PFHxS | 0.283 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.67 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.67 | PFOA | 0.067 | 0.064 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.06 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.06 | PFNA | 0.313 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.06 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.06 | PFOS | 0.181 | 0.177 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.42 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.41 | PFDA | 0.042 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | PFUnA | 0.055 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | PFDoA | 0.161 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.27 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.27 | PFTrDA | 0.060 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.49 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | PFTeDA | 0.047 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | NMeFOSAA | 0.544 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | NEtFOSAA | 0.061 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.17 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/08/2018 2:26:27 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY42 | **Injection Vial** | 6 |
| **Sample ID** | L5 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:20:26 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.55 | PFBS | 0.292 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.87 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | PFHxA | 0.077 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | PFHpA | 0.018 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | PFHxS | 0.288 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.67 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.67 | PFOA | 0.067 | 0.064 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.06 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.06 | PFNA | 0.302 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.06 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.06 | PFOS | 0.177 | 0.177 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.41 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.41 | PFDA | 0.039 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | PFUnA | 0.046 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | PFDoA | 0.151 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.27 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.26 | PFTrDA | 0.065 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.48 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | PFTeDA | 0.046 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | NMeFOSAA | 0.544 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | NEtFOSAA | 0.062 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.16 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/08/2018 2:26:33 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY43 | **Injection Vial** | 7 |
| **Sample ID** | L6 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:31:18 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.55 | PFBS | 0.295 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | PFHxA | 0.077 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | PFHpA | 0.020 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | PFHxS | 0.279 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.67 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.67 | PFOA | 0.063 | 0.064 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.06 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.06 | PFNA | 0.317 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.06 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.06 | PFOS | 0.182 | 0.177 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.41 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.41 | PFDA | 0.044 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | PFUnA | 0.048 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.01 | PFDoA | 0.157 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.26 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | PFTrDA | 0.063 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | PFTeDA | 0.048 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.56 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.56 | NMeFOSAA | 0.534 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | NEtFOSAA | 0.062 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.16 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/08/2018 2:26:39 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY44 | **Injection Vial** | 8 |
| **Sample ID** | L7 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:42:11 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.55 | PFBS | 0.297 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | PFHxA | 0.075 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.26 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.26 | PFHpA | 0.019 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | PFHxS | 0.281 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.66 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.66 | PFOA | 0.062 | 0.064 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.05 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.05 | PFNA | 0.296 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.04 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.04 | PFOS | 0.176 | 0.177 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.40 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.40 | PFDA | 0.044 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.72 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.72 | PFUnA | 0.051 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.00 | PFDoA | 0.166 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.25 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | PFTrDA | 0.063 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | PFTeDA | 0.048 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.55 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.55 | NMeFOSAA | 0.574 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.72 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.72 | NEtFOSAA | 0.065 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.16 | | | | |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:27:18 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY38 | **Injection Vial** | 2 |
| **Sample ID** | L1 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:36:54 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | 13C3-PFBS | 302.0 / 99.0 | 34980.72 | 232.25 |
| PFBS_2 | 298.9 / 99.0 | 1.56 | 13C3-PFBS | 302.0 / 99.0 | 34980.72 | 232.25 |
| PFHxA_1 | 313.0 / 269.0 | 1.88 | 13C5-PFHxA | 318.0 / 273.0 | 77959.28 | 250.00 |
| PFHxA_2 | 313.0 / 119.0 | 1.88 | 13C5-PFHxA | 318.0 / 273.0 | 77959.28 | 250.00 |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | 13C8-PFOA | 421.0 / 376.0 | 103247.70 | 250.00 |
| PFHpA_2 | 363.0 / 169.0 | 2.28 | 13C8-PFOA | 421.0 / 376.0 | 103247.70 | 250.00 |
| PFHxS_1 | 399.0 / 80.0 | 2.30 | 13C3-PFHxS | 402.0 / 99.0 | 31543.31 | 236.50 |
| PFHxS_2 | 399.0 / 99.0 | 2.29 | 13C3-PFHxS | 402.0 / 99.0 | 31543.31 | 236.50 |
| PFOA_1 | 413.0 / 369.0 | 2.68 | 13C8-PFOA | 421.0 / 376.0 | 103247.70 | 250.00 |
| PFOA_2 | 413.0 / 169.0 | 2.68 | 13C8-PFOA | 421.0 / 376.0 | 103247.70 | 250.00 |
| PFNA_1 | 463.0 / 419.0 | 3.07 | 13C9-PFNA | 472.0 / 427.0 | 103312.76 | 250.00 |
| PFNA_2 | 463.0 / 219.0 | 3.07 | 13C9-PFNA | 472.0 / 427.0 | 103312.76 | 250.00 |
| PFOS_1 | 499.0 / 80.0 | 3.06 | 13C8-PFOS | 507.0 / 99.0 | 34842.72 | 239.25 |
| PFOS_2 | 499.0 / 99.0 | 3.06 | 13C8-PFOS | 507.0 / 99.0 | 34842.72 | 239.25 |
| PFDA_1 | 513.0 / 469.0 | 3.42 | 13C6-PFDA | 519.0 / 474.0 | 104855.93 | 250.00 |
| PFDA_2 | 513.0 / 219.0 | 3.42 | 13C6-PFDA | 519.0 / 474.0 | 104855.93 | 250.00 |
| PFUnA_1 | 563.0 / 519.0 | 3.74 | 13C7-PFUnA | 570.0 / 525.0 | 115193.55 | 250.00 |
| PFUnA_2 | 563.0 / 269.0 | 3.74 | 13C7-PFUnA | 570.0 / 525.0 | 115193.55 | 250.00 |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | 13C2-PFDoA | 615.0 / 570.0 | 121558.79 | 250.00 |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | 13C2-PFDoA | 615.0 / 570.0 | 121558.79 | 250.00 |
| PFTrDA_1 | 663.0 / 619.0 | 4.27 | 13C2-PFTeDA | 715.0 / 670.0 | 104417.85 | 250.00 |
| PFTrDA_2 | 663.0 / 169.0 | 4.27 | 13C2-PFTeDA | 715.0 / 670.0 | 104417.85 | 250.00 |
| PFTeDA_1 | 713.0 / 669.0 | 4.49 | 13C2-PFTeDA | 715.0 / 670.0 | 104417.85 | 250.00 |
| PFTeDA_2 | 713.0 / 169.0 | 4.49 | 13C2-PFTeDA | 715.0 / 670.0 | 104417.85 | 250.00 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | d3-MeFOSAA | 573.0 / 419.0 | 18593.51 | 250.00 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | d3-MeFOSAA | 573.0 / 419.0 | 18593.51 | 250.00 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | d5-EtFOSAA | 589.0 / 419.0 | 21600.05 | 250.00 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.74 | d5-EtFOSAA | 589.0 / 419.0 | 21600.05 | 250.00 |
| PFBA | 213.0 / 169.0 | 1.17 | 13C4-PFBA | 217.0 / 172.0 | 94240.86 | 250.00 |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:27:24 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY39 | **Injection Vial** | 3 |
| **Sample ID** | L2 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:47:47 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | 13C3-PFBS | 302.0 / 99.0 | 33957.26 | 232.25 |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 13C3-PFBS | 302.0 / 99.0 | 33957.26 | 232.25 |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 13C5-PFHxA | 318.0 / 273.0 | 73872.08 | 250.00 |
| PFHxA_2 | 313.0 / 119.0 | 1.87 | 13C5-PFHxA | 318.0 / 273.0 | 73872.08 | 250.00 |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | 13C8-PFOA | 421.0 / 376.0 | 94482.83 | 250.00 |
| PFHpA_2 | 363.0 / 169.0 | 2.26 | 13C8-PFOA | 421.0 / 376.0 | 94482.83 | 250.00 |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | 13C3-PFHxS | 402.0 / 99.0 | 28404.76 | 236.50 |
| PFHxS_2 | 399.0 / 99.0 | 2.29 | 13C3-PFHxS | 402.0 / 99.0 | 28404.76 | 236.50 |
| PFOA_1 | 413.0 / 369.0 | 2.67 | 13C8-PFOA | 421.0 / 376.0 | 94482.83 | 250.00 |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 13C8-PFOA | 421.0 / 376.0 | 94482.83 | 250.00 |
| PFNA_1 | 463.0 / 419.0 | 3.06 | 13C9-PFNA | 472.0 / 427.0 | 90045.86 | 250.00 |
| PFNA_2 | 463.0 / 219.0 | 3.06 | 13C9-PFNA | 472.0 / 427.0 | 90045.86 | 250.00 |
| PFOS_1 | 499.0 / 80.0 | 3.06 | 13C8-PFOS | 507.0 / 99.0 | 31968.05 | 239.25 |
| PFOS_2 | 499.0 / 99.0 | 3.06 | 13C8-PFOS | 507.0 / 99.0 | 31968.05 | 239.25 |
| PFDA_1 | 513.0 / 469.0 | 3.41 | 13C6-PFDA | 519.0 / 474.0 | 106990.49 | 250.00 |
| PFDA_2 | 513.0 / 219.0 | 3.42 | 13C6-PFDA | 519.0 / 474.0 | 106990.49 | 250.00 |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | 13C7-PFUnA | 570.0 / 525.0 | 110535.74 | 250.00 |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | 13C7-PFUnA | 570.0 / 525.0 | 110535.74 | 250.00 |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | 13C2-PFDoA | 615.0 / 570.0 | 118292.59 | 250.00 |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | 13C2-PFDoA | 615.0 / 570.0 | 118292.59 | 250.00 |
| PFTrDA_1 | 663.0 / 619.0 | 4.26 | 13C2-PFTeDA | 715.0 / 670.0 | 102110.90 | 250.00 |
| PFTrDA_2 | 663.0 / 169.0 | 4.26 | 13C2-PFTeDA | 715.0 / 670.0 | 102110.90 | 250.00 |
| PFTeDA_1 | 713.0 / 669.0 | 4.49 | 13C2-PFTeDA | 715.0 / 670.0 | 102110.90 | 250.00 |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | 13C2-PFTeDA | 715.0 / 670.0 | 102110.90 | 250.00 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | d3-MeFOSAA | 573.0 / 419.0 | 16828.42 | 250.00 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | d3-MeFOSAA | 573.0 / 419.0 | 16828.42 | 250.00 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | d5-EtFOSAA | 589.0 / 419.0 | 19802.95 | 250.00 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | d5-EtFOSAA | 589.0 / 419.0 | 19802.95 | 250.00 |
| PFBA | 213.0 / 169.0 | 1.17 | 13C4-PFBA | 217.0 / 172.0 | 90356.40 | 250.00 |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:27:34 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY40 | **Injection Vial** | 4 |
| **Sample ID** | L3 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:58:41 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | 13C3-PFBS | 302.0 / 99.0 | 33404.82 | 232.25 |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 13C3-PFBS | 302.0 / 99.0 | 33404.82 | 232.25 |
| PFHxA_1 | 313.0 / 269.0 | 1.87 | 13C5-PFHxA | 318.0 / 273.0 | 76699.30 | 250.00 |
| PFHxA_2 | 313.0 / 119.0 | 1.87 | 13C5-PFHxA | 318.0 / 273.0 | 76699.30 | 250.00 |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | 13C8-PFOA | 421.0 / 376.0 | 95966.89 | 250.00 |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | 13C8-PFOA | 421.0 / 376.0 | 95966.89 | 250.00 |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | 13C3-PFHxS | 402.0 / 99.0 | 28381.69 | 236.50 |
| PFHxS_2 | 399.0 / 99.0 | 2.29 | 13C3-PFHxS | 402.0 / 99.0 | 28381.69 | 236.50 |
| PFOA_1 | 413.0 / 369.0 | 2.67 | 13C8-PFOA | 421.0 / 376.0 | 95966.89 | 250.00 |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 13C8-PFOA | 421.0 / 376.0 | 95966.89 | 250.00 |
| PFNA_1 | 463.0 / 419.0 | 3.06 | 13C9-PFNA | 472.0 / 427.0 | 96294.65 | 250.00 |
| PFNA_2 | 463.0 / 219.0 | 3.06 | 13C9-PFNA | 472.0 / 427.0 | 96294.65 | 250.00 |
| PFOS_1 | 499.0 / 80.0 | 3.06 | 13C8-PFOS | 507.0 / 99.0 | 31739.18 | 239.25 |
| PFOS_2 | 499.0 / 99.0 | 3.06 | 13C8-PFOS | 507.0 / 99.0 | 31739.18 | 239.25 |
| PFDA_1 | 513.0 / 469.0 | 3.41 | 13C6-PFDA | 519.0 / 474.0 | 108557.17 | 250.00 |
| PFDA_2 | 513.0 / 219.0 | 3.42 | 13C6-PFDA | 519.0 / 474.0 | 108557.17 | 250.00 |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | 13C7-PFUnA | 570.0 / 525.0 | 112942.63 | 250.00 |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | 13C7-PFUnA | 570.0 / 525.0 | 112942.63 | 250.00 |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | 13C2-PFDoA | 615.0 / 570.0 | 114977.10 | 250.00 |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | 13C2-PFDoA | 615.0 / 570.0 | 114977.10 | 250.00 |
| PFTrDA_1 | 663.0 / 619.0 | 4.26 | 13C2-PFTeDA | 715.0 / 670.0 | 101736.77 | 250.00 |
| PFTrDA_2 | 663.0 / 169.0 | 4.26 | 13C2-PFTeDA | 715.0 / 670.0 | 101736.77 | 250.00 |
| PFTeDA_1 | 713.0 / 669.0 | 4.48 | 13C2-PFTeDA | 715.0 / 670.0 | 101736.77 | 250.00 |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | 13C2-PFTeDA | 715.0 / 670.0 | 101736.77 | 250.00 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | d3-MeFOSAA | 573.0 / 419.0 | 16811.19 | 250.00 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | d3-MeFOSAA | 573.0 / 419.0 | 16811.19 | 250.00 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | d5-EtFOSAA | 589.0 / 419.0 | 22038.82 | 250.00 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | d5-EtFOSAA | 589.0 / 419.0 | 22038.82 | 250.00 |
| PFBA | 213.0 / 169.0 | 1.17 | 13C4-PFBA | 217.0 / 172.0 | 89531.18 | 250.00 |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:27:40 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY41 | **Injection Vial** | 5 |
| **Sample ID** | L4 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:09:34 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | 13C3-PFBS | 302.0 / 99.0 | 34014.03 | 232.25 |
| PFBS_2 | 298.9 / 99.0 | 1.56 | 13C3-PFBS | 302.0 / 99.0 | 34014.03 | 232.25 |
| PFHxA_1 | 313.0 / 269.0 | 1.87 | 13C5-PFHxA | 318.0 / 273.0 | 84047.21 | 250.00 |
| PFHxA_2 | 313.0 / 119.0 | 1.87 | 13C5-PFHxA | 318.0 / 273.0 | 84047.21 | 250.00 |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | 13C8-PFOA | 421.0 / 376.0 | 92592.23 | 250.00 |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | 13C8-PFOA | 421.0 / 376.0 | 92592.23 | 250.00 |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | 13C3-PFHxS | 402.0 / 99.0 | 28591.27 | 236.50 |
| PFHxS_2 | 399.0 / 99.0 | 2.29 | 13C3-PFHxS | 402.0 / 99.0 | 28591.27 | 236.50 |
| PFOA_1 | 413.0 / 369.0 | 2.67 | 13C8-PFOA | 421.0 / 376.0 | 92592.23 | 250.00 |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 13C8-PFOA | 421.0 / 376.0 | 92592.23 | 250.00 |
| PFNA_1 | 463.0 / 419.0 | 3.06 | 13C9-PFNA | 472.0 / 427.0 | 101567.70 | 250.00 |
| PFNA_2 | 463.0 / 219.0 | 3.06 | 13C9-PFNA | 472.0 / 427.0 | 101567.70 | 250.00 |
| PFOS_1 | 499.0 / 80.0 | 3.06 | 13C8-PFOS | 507.0 / 99.0 | 29003.78 | 239.25 |
| PFOS_2 | 499.0 / 99.0 | 3.06 | 13C8-PFOS | 507.0 / 99.0 | 29003.78 | 239.25 |
| PFDA_1 | 513.0 / 469.0 | 3.42 | 13C6-PFDA | 519.0 / 474.0 | 102571.89 | 250.00 |
| PFDA_2 | 513.0 / 219.0 | 3.41 | 13C6-PFDA | 519.0 / 474.0 | 102571.89 | 250.00 |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | 13C7-PFUnA | 570.0 / 525.0 | 112720.36 | 250.00 |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | 13C7-PFUnA | 570.0 / 525.0 | 112720.36 | 250.00 |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | 13C2-PFDoA | 615.0 / 570.0 | 114449.09 | 250.00 |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | 13C2-PFDoA | 615.0 / 570.0 | 114449.09 | 250.00 |
| PFTrDA_1 | 663.0 / 619.0 | 4.27 | 13C2-PFTeDA | 715.0 / 670.0 | 103390.87 | 250.00 |
| PFTrDA_2 | 663.0 / 169.0 | 4.27 | 13C2-PFTeDA | 715.0 / 670.0 | 103390.87 | 250.00 |
| PFTeDA_1 | 713.0 / 669.0 | 4.49 | 13C2-PFTeDA | 715.0 / 670.0 | 103390.87 | 250.00 |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | 13C2-PFTeDA | 715.0 / 670.0 | 103390.87 | 250.00 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | d3-MeFOSAA | 573.0 / 419.0 | 17463.24 | 250.00 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | d3-MeFOSAA | 573.0 / 419.0 | 17463.24 | 250.00 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | d5-EtFOSAA | 589.0 / 419.0 | 20789.36 | 250.00 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | d5-EtFOSAA | 589.0 / 419.0 | 20789.36 | 250.00 |
| PFBA | 213.0 / 169.0 | 1.17 | 13C4-PFBA | 217.0 / 172.0 | 92197.78 | 250.00 |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:27:45 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY42 | **Injection Vial** | 6 |
| **Sample ID** | L5 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:20:26 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | 13C3-PFBS | 302.0 / 99.0 | 37167.05 | 232.25 |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 13C3-PFBS | 302.0 / 99.0 | 37167.05 | 232.25 |
| PFHxA_1 | 313.0 / 269.0 | 1.87 | 13C5-PFHxA | 318.0 / 273.0 | 84931.23 | 250.00 |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 13C5-PFHxA | 318.0 / 273.0 | 84931.23 | 250.00 |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | 13C8-PFOA | 421.0 / 376.0 | 103079.74 | 250.00 |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | 13C8-PFOA | 421.0 / 376.0 | 103079.74 | 250.00 |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | 13C3-PFHxS | 402.0 / 99.0 | 29518.14 | 236.50 |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | 13C3-PFHxS | 402.0 / 99.0 | 29518.14 | 236.50 |
| PFOA_1 | 413.0 / 369.0 | 2.67 | 13C8-PFOA | 421.0 / 376.0 | 103079.74 | 250.00 |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 13C8-PFOA | 421.0 / 376.0 | 103079.74 | 250.00 |
| PFNA_1 | 463.0 / 419.0 | 3.06 | 13C9-PFNA | 472.0 / 427.0 | 106066.51 | 250.00 |
| PFNA_2 | 463.0 / 219.0 | 3.06 | 13C9-PFNA | 472.0 / 427.0 | 106066.51 | 250.00 |
| PFOS_1 | 499.0 / 80.0 | 3.06 | 13C8-PFOS | 507.0 / 99.0 | 38907.11 | 239.25 |
| PFOS_2 | 499.0 / 99.0 | 3.06 | 13C8-PFOS | 507.0 / 99.0 | 38907.11 | 239.25 |
| PFDA_1 | 513.0 / 469.0 | 3.41 | 13C6-PFDA | 519.0 / 474.0 | 110277.16 | 250.00 |
| PFDA_2 | 513.0 / 219.0 | 3.41 | 13C6-PFDA | 519.0 / 474.0 | 110277.16 | 250.00 |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | 13C7-PFUnA | 570.0 / 525.0 | 112424.70 | 250.00 |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | 13C7-PFUnA | 570.0 / 525.0 | 112424.70 | 250.00 |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | 13C2-PFDoA | 615.0 / 570.0 | 124526.00 | 250.00 |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | 13C2-PFDoA | 615.0 / 570.0 | 124526.00 | 250.00 |
| PFTrDA_1 | 663.0 / 619.0 | 4.27 | 13C2-PFTeDA | 715.0 / 670.0 | 113288.38 | 250.00 |
| PFTrDA_2 | 663.0 / 169.0 | 4.26 | 13C2-PFTeDA | 715.0 / 670.0 | 113288.38 | 250.00 |
| PFTeDA_1 | 713.0 / 669.0 | 4.48 | 13C2-PFTeDA | 715.0 / 670.0 | 113288.38 | 250.00 |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | 13C2-PFTeDA | 715.0 / 670.0 | 113288.38 | 250.00 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | d3-MeFOSAA | 573.0 / 419.0 | 18005.76 | 250.00 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | d3-MeFOSAA | 573.0 / 419.0 | 18005.76 | 250.00 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | d5-EtFOSAA | 589.0 / 419.0 | 23781.37 | 250.00 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | d5-EtFOSAA | 589.0 / 419.0 | 23781.37 | 250.00 |
| PFBA | 213.0 / 169.0 | 1.16 | 13C4-PFBA | 217.0 / 172.0 | 94812.35 | 250.00 |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:27:53 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY43 | **Injection Vial** | 7 |
| **Sample ID** | L6 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:31:18 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | 13C3-PFBS | 302.0 / 99.0 | 32933.01 | 232.25 |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 13C3-PFBS | 302.0 / 99.0 | 32933.01 | 232.25 |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 13C5-PFHxA | 318.0 / 273.0 | 77887.15 | 250.00 |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 13C5-PFHxA | 318.0 / 273.0 | 77887.15 | 250.00 |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | 13C8-PFOA | 421.0 / 376.0 | 92385.29 | 250.00 |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | 13C8-PFOA | 421.0 / 376.0 | 92385.29 | 250.00 |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | 13C3-PFHxS | 402.0 / 99.0 | 24411.73 | 236.50 |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | 13C3-PFHxS | 402.0 / 99.0 | 24411.73 | 236.50 |
| PFOA_1 | 413.0 / 369.0 | 2.67 | 13C8-PFOA | 421.0 / 376.0 | 92385.29 | 250.00 |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 13C8-PFOA | 421.0 / 376.0 | 92385.29 | 250.00 |
| PFNA_1 | 463.0 / 419.0 | 3.06 | 13C9-PFNA | 472.0 / 427.0 | 92781.11 | 250.00 |
| PFNA_2 | 463.0 / 219.0 | 3.06 | 13C9-PFNA | 472.0 / 427.0 | 92781.11 | 250.00 |
| PFOS_1 | 499.0 / 80.0 | 3.06 | 13C8-PFOS | 507.0 / 99.0 | 30504.85 | 239.25 |
| PFOS_2 | 499.0 / 99.0 | 3.06 | 13C8-PFOS | 507.0 / 99.0 | 30504.85 | 239.25 |
| PFDA_1 | 513.0 / 469.0 | 3.41 | 13C6-PFDA | 519.0 / 474.0 | 92155.82 | 250.00 |
| PFDA_2 | 513.0 / 219.0 | 3.41 | 13C6-PFDA | 519.0 / 474.0 | 92155.82 | 250.00 |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | 13C7-PFUnA | 570.0 / 525.0 | 104399.66 | 250.00 |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | 13C7-PFUnA | 570.0 / 525.0 | 104399.66 | 250.00 |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | 13C2-PFDoA | 615.0 / 570.0 | 118499.11 | 250.00 |
| PFDoA_2 | 613.0 / 319.0 | 4.01 | 13C2-PFDoA | 615.0 / 570.0 | 118499.11 | 250.00 |
| PFTrDA_1 | 663.0 / 619.0 | 4.26 | 13C2-PFTeDA | 715.0 / 670.0 | 105351.86 | 250.00 |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | 13C2-PFTeDA | 715.0 / 670.0 | 105351.86 | 250.00 |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | 13C2-PFTeDA | 715.0 / 670.0 | 105351.86 | 250.00 |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | 13C2-PFTeDA | 715.0 / 670.0 | 105351.86 | 250.00 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.56 | d3-MeFOSAA | 573.0 / 419.0 | 19922.38 | 250.00 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.56 | d3-MeFOSAA | 573.0 / 419.0 | 19922.38 | 250.00 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | d5-EtFOSAA | 589.0 / 419.0 | 20010.07 | 250.00 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | d5-EtFOSAA | 589.0 / 419.0 | 20010.07 | 250.00 |
| PFBA | 213.0 / 169.0 | 1.16 | 13C4-PFBA | 217.0 / 172.0 | 89257.42 | 250.00 |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:27:59 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY44 | **Injection Vial** | 8 |
| **Sample ID** | L7 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:42:11 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | 13C3-PFBS | 302.0 / 99.0 | 37259.25 | 232.25 |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 13C3-PFBS | 302.0 / 99.0 | 37259.25 | 232.25 |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 13C5-PFHxA | 318.0 / 273.0 | 84543.45 | 250.00 |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 13C5-PFHxA | 318.0 / 273.0 | 84543.45 | 250.00 |
| PFHpA_1 | 363.0 / 319.0 | 2.26 | 13C8-PFOA | 421.0 / 376.0 | 85746.27 | 250.00 |
| PFHpA_2 | 363.0 / 169.0 | 2.26 | 13C8-PFOA | 421.0 / 376.0 | 85746.27 | 250.00 |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | 13C3-PFHxS | 402.0 / 99.0 | 27551.26 | 236.50 |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | 13C3-PFHxS | 402.0 / 99.0 | 27551.26 | 236.50 |
| PFOA_1 | 413.0 / 369.0 | 2.66 | 13C8-PFOA | 421.0 / 376.0 | 85746.27 | 250.00 |
| PFOA_2 | 413.0 / 169.0 | 2.66 | 13C8-PFOA | 421.0 / 376.0 | 85746.27 | 250.00 |
| PFNA_1 | 463.0 / 419.0 | 3.05 | 13C9-PFNA | 472.0 / 427.0 | 99852.33 | 250.00 |
| PFNA_2 | 463.0 / 219.0 | 3.05 | 13C9-PFNA | 472.0 / 427.0 | 99852.33 | 250.00 |
| PFOS_1 | 499.0 / 80.0 | 3.04 | 13C8-PFOS | 507.0 / 99.0 | 32412.63 | 239.25 |
| PFOS_2 | 499.0 / 99.0 | 3.04 | 13C8-PFOS | 507.0 / 99.0 | 32412.63 | 239.25 |
| PFDA_1 | 513.0 / 469.0 | 3.40 | 13C6-PFDA | 519.0 / 474.0 | 99595.19 | 250.00 |
| PFDA_2 | 513.0 / 219.0 | 3.40 | 13C6-PFDA | 519.0 / 474.0 | 99595.19 | 250.00 |
| PFUnA_1 | 563.0 / 519.0 | 3.72 | 13C7-PFUnA | 570.0 / 525.0 | 98728.73 | 250.00 |
| PFUnA_2 | 563.0 / 269.0 | 3.72 | 13C7-PFUnA | 570.0 / 525.0 | 98728.73 | 250.00 |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | 13C2-PFDoA | 615.0 / 570.0 | 127613.93 | 250.00 |
| PFDoA_2 | 613.0 / 319.0 | 4.00 | 13C2-PFDoA | 615.0 / 570.0 | 127613.93 | 250.00 |
| PFTrDA_1 | 663.0 / 619.0 | 4.25 | 13C2-PFTeDA | 715.0 / 670.0 | 116605.95 | 250.00 |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | 13C2-PFTeDA | 715.0 / 670.0 | 116605.95 | 250.00 |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | 13C2-PFTeDA | 715.0 / 670.0 | 116605.95 | 250.00 |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | 13C2-PFTeDA | 715.0 / 670.0 | 116605.95 | 250.00 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.55 | d3-MeFOSAA | 573.0 / 419.0 | 20621.38 | 250.00 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.55 | d3-MeFOSAA | 573.0 / 419.0 | 20621.38 | 250.00 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.72 | d5-EtFOSAA | 589.0 / 419.0 | 18288.89 | 250.00 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.72 | d5-EtFOSAA | 589.0 / 419.0 | 18288.89 | 250.00 |
| PFBA | 213.0 / 169.0 | 1.16 | 13C4-PFBA | 217.0 / 172.0 | 93058.55 | 250.00 |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:13:21 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY38 | **Injection Vial** | 2 |
| **Sample ID** | L1 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:36:54 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.17 | 13C3-PFBA | 216.0 / 172.0 | 55737.70 | 250.00 |
| 13C2-PFDoA | 615.0 / 570.0 | 4.01 | 13C2-PFDA | 515.0 / 470.0 | 101703.93 | 250.00 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.57 | 13C4-PFOS | 503.0 / 99.0 | 33175.18 | 239.25 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.73 | 13C4-PFOS | 503.0 / 99.0 | 33175.18 | 239.25 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.86 | 13C2-PFOA | 415.0 / 370.0 | 89686.34 | 250.00 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.26 | 13C2-PFOA | 415.0 / 370.0 | 89686.34 | 250.00 |
| 13C8-PFOA | 421.0 / 376.0 | 2.67 | 13C2-PFOA | 415.0 / 370.0 | 89686.34 | 250.00 |
| 13C9-PFNA | 472.0 / 427.0 | 3.06 | 13C2-PFOA | 415.0 / 370.0 | 89686.34 | 250.00 |
| 13C6-PFDA | 519.0 / 474.0 | 3.41 | 13C2-PFDA | 515.0 / 470.0 | 101703.93 | 250.00 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.72 | 13C2-PFDA | 515.0 / 470.0 | 101703.93 | 250.00 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.48 | 13C2-PFDA | 515.0 / 470.0 | 101703.93 | 250.00 |
| 13C3-PFBS | 302.0 / 99.0 | 1.54 | 13C4-PFOS | 503.0 / 99.0 | 33175.18 | 239.25 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.28 | 13C4-PFOS | 503.0 / 99.0 | 33175.18 | 239.25 |
| 13C8-PFOS | 507.0 / 99.0 | 3.05 | 13C4-PFOS | 503.0 / 99.0 | 33175.18 | 239.25 |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:13:27 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY39 | **Injection Vial** | 3 |
| **Sample ID** | L2 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:47:47 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.17 | 13C3-PFBA | 216.0 / 172.0 | 54856.95 | 250.00 |
| 13C2-PFDoA | 615.0 / 570.0 | 4.01 | 13C2-PFDA | 515.0 / 470.0 | 104669.39 | 250.00 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.56 | 13C4-PFOS | 503.0 / 99.0 | 31211.04 | 239.25 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.72 | 13C4-PFOS | 503.0 / 99.0 | 31211.04 | 239.25 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 13C2-PFOA | 415.0 / 370.0 | 90381.96 | 250.00 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 13C2-PFOA | 415.0 / 370.0 | 90381.96 | 250.00 |
| 13C8-PFOA | 421.0 / 376.0 | 2.66 | 13C2-PFOA | 415.0 / 370.0 | 90381.96 | 250.00 |
| 13C9-PFNA | 472.0 / 427.0 | 3.05 | 13C2-PFOA | 415.0 / 370.0 | 90381.96 | 250.00 |
| 13C6-PFDA | 519.0 / 474.0 | 3.40 | 13C2-PFDA | 515.0 / 470.0 | 104669.39 | 250.00 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.72 | 13C2-PFDA | 515.0 / 470.0 | 104669.39 | 250.00 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.48 | 13C2-PFDA | 515.0 / 470.0 | 104669.39 | 250.00 |
| 13C3-PFBS | 302.0 / 99.0 | 1.54 | 13C4-PFOS | 503.0 / 99.0 | 31211.04 | 239.25 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.28 | 13C4-PFOS | 503.0 / 99.0 | 31211.04 | 239.25 |
| 13C8-PFOS | 507.0 / 99.0 | 3.04 | 13C4-PFOS | 503.0 / 99.0 | 31211.04 | 239.25 |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:13:33 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY40 | **Injection Vial** | 4 |
| **Sample ID** | L3 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:58:41 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.17 | 13C3-PFBA | 216.0 / 172.0 | 57614.29 | 250.00 |
| 13C2-PFDoA | 615.0 / 570.0 | 4.01 | 13C2-PFDA | 515.0 / 470.0 | 99261.32 | 250.00 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.56 | 13C4-PFOS | 503.0 / 99.0 | 31393.82 | 239.25 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.72 | 13C4-PFOS | 503.0 / 99.0 | 31393.82 | 239.25 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 13C2-PFOA | 415.0 / 370.0 | 87326.72 | 250.00 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.26 | 13C2-PFOA | 415.0 / 370.0 | 87326.72 | 250.00 |
| 13C8-PFOA | 421.0 / 376.0 | 2.66 | 13C2-PFOA | 415.0 / 370.0 | 87326.72 | 250.00 |
| 13C9-PFNA | 472.0 / 427.0 | 3.05 | 13C2-PFOA | 415.0 / 370.0 | 87326.72 | 250.00 |
| 13C6-PFDA | 519.0 / 474.0 | 3.40 | 13C2-PFDA | 515.0 / 470.0 | 99261.32 | 250.00 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.72 | 13C2-PFDA | 515.0 / 470.0 | 99261.32 | 250.00 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.48 | 13C2-PFDA | 515.0 / 470.0 | 99261.32 | 250.00 |
| 13C3-PFBS | 302.0 / 99.0 | 1.54 | 13C4-PFOS | 503.0 / 99.0 | 31393.82 | 239.25 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.28 | 13C4-PFOS | 503.0 / 99.0 | 31393.82 | 239.25 |
| 13C8-PFOS | 507.0 / 99.0 | 3.04 | 13C4-PFOS | 503.0 / 99.0 | 31393.82 | 239.25 |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:13:40 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY41 | **Injection Vial** | 5 |
| **Sample ID** | L4 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:09:34 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.17 | 13C3-PFBA | 216.0 / 172.0 | 57883.97 | 250.00 |
| 13C2-PFDoA | 615.0 / 570.0 | 4.01 | 13C2-PFDA | 515.0 / 470.0 | 100506.14 | 250.00 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.56 | 13C4-PFOS | 503.0 / 99.0 | 31692.96 | 239.25 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.72 | 13C4-PFOS | 503.0 / 99.0 | 31692.96 | 239.25 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.86 | 13C2-PFOA | 415.0 / 370.0 | 89865.42 | 250.00 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.26 | 13C2-PFOA | 415.0 / 370.0 | 89865.42 | 250.00 |
| 13C8-PFOA | 421.0 / 376.0 | 2.66 | 13C2-PFOA | 415.0 / 370.0 | 89865.42 | 250.00 |
| 13C9-PFNA | 472.0 / 427.0 | 3.05 | 13C2-PFOA | 415.0 / 370.0 | 89865.42 | 250.00 |
| 13C6-PFDA | 519.0 / 474.0 | 3.40 | 13C2-PFDA | 515.0 / 470.0 | 100506.14 | 250.00 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.72 | 13C2-PFDA | 515.0 / 470.0 | 100506.14 | 250.00 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.48 | 13C2-PFDA | 515.0 / 470.0 | 100506.14 | 250.00 |
| 13C3-PFBS | 302.0 / 99.0 | 1.54 | 13C4-PFOS | 503.0 / 99.0 | 31692.96 | 239.25 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.28 | 13C4-PFOS | 503.0 / 99.0 | 31692.96 | 239.25 |
| 13C8-PFOS | 507.0 / 99.0 | 3.05 | 13C4-PFOS | 503.0 / 99.0 | 31692.96 | 239.25 |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:13:48 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY42 | **Injection Vial** | 6 |
| **Sample ID** | L5 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:20:26 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.17 | 13C3-PFBA | 216.0 / 172.0 | 62099.81 | 250.00 |
| 13C2-PFDoA | 615.0 / 570.0 | 4.01 | 13C2-PFDA | 515.0 / 470.0 | 105936.28 | 250.00 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.56 | 13C4-PFOS | 503.0 / 99.0 | 32248.02 | 239.25 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.72 | 13C4-PFOS | 503.0 / 99.0 | 32248.02 | 239.25 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 13C2-PFOA | 415.0 / 370.0 | 92608.08 | 250.00 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 13C2-PFOA | 415.0 / 370.0 | 92608.08 | 250.00 |
| 13C8-PFOA | 421.0 / 376.0 | 2.66 | 13C2-PFOA | 415.0 / 370.0 | 92608.08 | 250.00 |
| 13C9-PFNA | 472.0 / 427.0 | 3.05 | 13C2-PFOA | 415.0 / 370.0 | 92608.08 | 250.00 |
| 13C6-PFDA | 519.0 / 474.0 | 3.40 | 13C2-PFDA | 515.0 / 470.0 | 105936.28 | 250.00 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.72 | 13C2-PFDA | 515.0 / 470.0 | 105936.28 | 250.00 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.48 | 13C2-PFDA | 515.0 / 470.0 | 105936.28 | 250.00 |
| 13C3-PFBS | 302.0 / 99.0 | 1.54 | 13C4-PFOS | 503.0 / 99.0 | 32248.02 | 239.25 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.28 | 13C4-PFOS | 503.0 / 99.0 | 32248.02 | 239.25 |
| 13C8-PFOS | 507.0 / 99.0 | 3.04 | 13C4-PFOS | 503.0 / 99.0 | 32248.02 | 239.25 |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:13:55 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY43 | **Injection Vial** | 7 |
| **Sample ID** | L6 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:31:18 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.17 | 13C3-PFBA | 216.0 / 172.0 | 58707.76 | 250.00 |
| 13C2-PFDoA | 615.0 / 570.0 | 4.00 | 13C2-PFDA | 515.0 / 470.0 | 113124.25 | 250.00 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.56 | 13C4-PFOS | 503.0 / 99.0 | 32619.41 | 239.25 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.72 | 13C4-PFOS | 503.0 / 99.0 | 32619.41 | 239.25 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 13C2-PFOA | 415.0 / 370.0 | 91795.08 | 250.00 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 13C2-PFOA | 415.0 / 370.0 | 91795.08 | 250.00 |
| 13C8-PFOA | 421.0 / 376.0 | 2.66 | 13C2-PFOA | 415.0 / 370.0 | 91795.08 | 250.00 |
| 13C9-PFNA | 472.0 / 427.0 | 3.04 | 13C2-PFOA | 415.0 / 370.0 | 91795.08 | 250.00 |
| 13C6-PFDA | 519.0 / 474.0 | 3.40 | 13C2-PFDA | 515.0 / 470.0 | 113124.25 | 250.00 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.71 | 13C2-PFDA | 515.0 / 470.0 | 113124.25 | 250.00 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.47 | 13C2-PFDA | 515.0 / 470.0 | 113124.25 | 250.00 |
| 13C3-PFBS | 302.0 / 99.0 | 1.54 | 13C4-PFOS | 503.0 / 99.0 | 32619.41 | 239.25 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.27 | 13C4-PFOS | 503.0 / 99.0 | 32619.41 | 239.25 |
| 13C8-PFOS | 507.0 / 99.0 | 3.04 | 13C4-PFOS | 503.0 / 99.0 | 32619.41 | 239.25 |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:14:01 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY44 | **Injection Vial** | 8 |
| **Sample ID** | L7 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:42:11 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.16 | 13C3-PFBA | 216.0 / 172.0 | 56480.01 | 250.00 |
| 13C2-PFDoA | 615.0 / 570.0 | 3.99 | 13C2-PFDA | 515.0 / 470.0 | 103798.12 | 250.00 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.55 | 13C4-PFOS | 503.0 / 99.0 | 28605.63 | 239.25 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.71 | 13C4-PFOS | 503.0 / 99.0 | 28605.63 | 239.25 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 13C2-PFOA | 415.0 / 370.0 | 91050.54 | 250.00 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 13C2-PFOA | 415.0 / 370.0 | 91050.54 | 250.00 |
| 13C8-PFOA | 421.0 / 376.0 | 2.65 | 13C2-PFOA | 415.0 / 370.0 | 91050.54 | 250.00 |
| 13C9-PFNA | 472.0 / 427.0 | 3.03 | 13C2-PFOA | 415.0 / 370.0 | 91050.54 | 250.00 |
| 13C6-PFDA | 519.0 / 474.0 | 3.38 | 13C2-PFDA | 515.0 / 470.0 | 103798.12 | 250.00 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.71 | 13C2-PFDA | 515.0 / 470.0 | 103798.12 | 250.00 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.46 | 13C2-PFDA | 515.0 / 470.0 | 103798.12 | 250.00 |
| 13C3-PFBS | 302.0 / 99.0 | 1.53 | 13C4-PFOS | 503.0 / 99.0 | 28605.63 | 239.25 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.27 | 13C4-PFOS | 503.0 / 99.0 | 28605.63 | 239.25 |
| 13C8-PFOS | 507.0 / 99.0 | 3.03 | 13C4-PFOS | 503.0 / 99.0 | 28605.63 | 239.25 |

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:28:39 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY45 ICC | **Injection Vial** | 10 |
| **Sample ID** | ICC | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T00:03:55 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Conc. (ng/L) | Target Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | 945.317305 | 1010.00 | 93.60 |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 935.514031 | 1010.00 | 92.63 |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 955.098649 | 1010.00 | 94.56 |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 1000.164747 | 1010.00 | 99.03 |
| PFHpA_1 | 363.0 / 319.0 | 2.26 | 896.029725 | 1000.00 | 89.60 |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | 772.698196 | 1000.00 | 77.27 |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | 965.455677 | 1010.00 | 95.59 |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | 995.242077 | 1010.00 | 98.54 |
| PFOA_1 | 413.0 / 369.0 | 2.67 | 882.629871 | 1000.00 | 88.26 |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 933.664163 | 1000.00 | 93.37 |
| PFNA_1 | 463.0 / 419.0 | 3.05 | 945.837479 | 1000.00 | 94.58 |
| PFNA_2 | 463.0 / 219.0 | 3.05 | 977.984830 | 1000.00 | 97.80 |
| PFOS_1 | 499.0 / 80.0 | 3.05 | 848.909424 | 1000.00 | 84.89 |
| PFOS_2 | 499.0 / 99.0 | 3.05 | 883.759256 | 1000.00 | 88.38 |
| PFDA_1 | 513.0 / 469.0 | 3.40 | 993.565292 | 1000.00 | 99.36 |
| PFDA_2 | 513.0 / 219.0 | 3.41 | 898.454706 | 1000.00 | 89.85 |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | 945.238689 | 1000.00 | 94.52 |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | 853.408516 | 1000.00 | 85.34 |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | 1005.730822 | 1000.00 | 100.57 |
| PFDoA_2 | 613.0 / 319.0 | 4.01 | 983.797996 | 1000.00 | 98.38 |
| PFTrDA_1 | 663.0 / 619.0 | 4.25 | 1016.995563 | 1000.00 | 101.70 |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | 1017.066538 | 1000.00 | 101.71 |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | 1006.665369 | 1000.00 | 100.67 |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | 964.000724 | 1000.00 | 96.40 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.56 | 1038.070101 | 1000.00 | 103.81 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.56 | 1030.221581 | 1000.00 | 103.02 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.72 | 932.896900 | 1000.00 | 93.29 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.72 | 992.807735 | 1000.00 | 99.28 |
| PFBA | 213.0 / 169.0 | 1.17 | 911.339203 | 1000.00 | 91.13 |

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:28:44 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY41 CCV | **Injection Vial** | 18 |
| **Sample ID** | CCV | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:41:46 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Conc. (ng/L) | Target Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | 950.847656 | 1010.00 | 94.14 |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 945.017353 | 1010.00 | 93.57 |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 965.269441 | 1010.00 | 95.57 |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 966.044767 | 1010.00 | 95.65 |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | 945.477863 | 1000.00 | 94.55 |
| PFHpA_2 | 363.0 / 169.0 | 2.26 | 965.196317 | 1000.00 | 96.52 |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | 993.450506 | 1010.00 | 98.36 |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | 981.879581 | 1010.00 | 97.22 |
| PFOA_1 | 413.0 / 369.0 | 2.67 | 929.030152 | 1000.00 | 92.90 |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 900.588864 | 1000.00 | 90.06 |
| PFNA_1 | 463.0 / 419.0 | 3.06 | 987.821461 | 1000.00 | 98.78 |
| PFNA_2 | 463.0 / 219.0 | 3.06 | 945.261294 | 1000.00 | 94.53 |
| PFOS_1 | 499.0 / 80.0 | 3.06 | 934.607855 | 1000.00 | 93.46 |
| PFOS_2 | 499.0 / 99.0 | 3.06 | 949.403596 | 1000.00 | 94.94 |
| PFDA_1 | 513.0 / 469.0 | 3.41 | 978.375017 | 1000.00 | 97.84 |
| PFDA_2 | 513.0 / 219.0 | 3.41 | 1043.552710 | 1000.00 | 104.36 |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | 832.529989 | 1000.00 | 83.25 |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | 853.891854 | 1000.00 | 85.39 |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | 998.337174 | 1000.00 | 99.83 |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | 1023.050484 | 1000.00 | 102.31 |
| PFTrDA_1 | 663.0 / 619.0 | 4.26 | 983.863398 | 1000.00 | 98.39 |
| PFTrDA_2 | 663.0 / 169.0 | 4.26 | 1029.279993 | 1000.00 | 102.93 |
| PFTeDA_1 | 713.0 / 669.0 | 4.48 | 1005.405463 | 1000.00 | 100.54 |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | 969.105595 | 1000.00 | 96.91 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | 1066.027098 | 1000.00 | 106.60 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | 1046.776092 | 1000.00 | 104.68 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | 968.096783 | 1000.00 | 96.81 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | 1041.007902 | 1000.00 | 104.10 |
| PFBA | 213.0 / 169.0 | 1.16 | 987.885594 | 1000.00 | 98.79 |

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:14:44 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY45 ICC | **Injection Vial** | 10 |
| **Sample ID** | ICC | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T00:03:55 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Conc. (ng/L) | Target Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.17 | 256.423433 | 250.00 | 102.57 |
| 13C2-PFDoA | 615.0 / 570.0 | 4.00 | 236.412962 | 250.00 | 94.57 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.55 | 229.007354 | 250.00 | 91.60 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.71 | 244.394489 | 250.00 | 97.76 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 257.007980 | 250.00 | 102.80 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 257.575529 | 250.00 | 103.03 |
| 13C8-PFOA | 421.0 / 376.0 | 2.66 | 253.920137 | 250.00 | 101.57 |
| 13C9-PFNA | 472.0 / 427.0 | 3.04 | 266.243110 | 250.00 | 106.50 |
| 13C6-PFDA | 519.0 / 474.0 | 3.39 | 253.349129 | 250.00 | 101.34 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.71 | 245.125330 | 250.00 | 98.05 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.47 | 231.378794 | 250.00 | 92.55 |
| 13C3-PFBS | 302.0 / 99.0 | 1.53 | 214.031789 | 232.25 | 92.16 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.27 | 204.130881 | 236.50 | 86.31 |
| 13C8-PFOS | 507.0 / 99.0 | 3.03 | 237.268489 | 239.50 | 99.07 |

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:14:56 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY41 CCV | **Injection Vial** | 18 |
| **Sample ID** | CCV | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:41:46 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Conc. (ng/L) | Target Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.16 | 261.012832 | 250.00 | 104.41 |
| 13C2-PFDoA | 615.0 / 570.0 | 4.01 | 236.565854 | 250.00 | 94.63 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.56 | 243.437952 | 250.00 | 97.38 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.72 | 256.645799 | 250.00 | 102.66 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 248.973663 | 250.00 | 99.59 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 253.470989 | 250.00 | 101.39 |
| 13C8-PFOA | 421.0 / 376.0 | 2.66 | 248.455544 | 250.00 | 99.38 |
| 13C9-PFNA | 472.0 / 427.0 | 3.05 | 245.332675 | 250.00 | 98.13 |
| 13C6-PFDA | 519.0 / 474.0 | 3.40 | 244.197461 | 250.00 | 97.68 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.72 | 259.891843 | 250.00 | 103.96 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.48 | 233.166654 | 250.00 | 93.27 |
| 13C3-PFBS | 302.0 / 99.0 | 1.54 | 231.035155 | 232.25 | 99.48 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.28 | 233.820301 | 236.50 | 98.87 |
| 13C8-PFOS | 507.0 / 99.0 | 3.04 | 246.499378 | 239.50 | 102.92 |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:29:19 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY45 ICC | **Injection Vial** | 10 |
| **Sample ID** | ICC | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T00:03:55 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | 471977.28 | 945.317305 | 439.4 | false |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 137817.48 | 935.514031 | 245.3 | false |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 361850.29 | 955.098649 | 61.5 | false |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 28236.47 | 1000.164747 | 62.8 | false |
| PFHpA_1 | 363.0 / 319.0 | 2.26 | 321110.09 | 896.029725 | 130.6 | false |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | 5718.08 | 772.698196 | 106.0 | false |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | 475710.02 | 965.455677 | 280.5 | false |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | 138090.54 | 995.242077 | 595.8 | false |
| PFOA_1 | 413.0 / 369.0 | 2.67 | 432964.90 | 882.629871 | 242.8 | false |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 29150.56 | 933.664163 | 155.6 | false |
| PFNA_1 | 463.0 / 419.0 | 3.05 | 427938.76 | 945.837479 | 279.6 | true |
| PFNA_2 | 463.0 / 219.0 | 3.05 | 136131.21 | 977.984830 | 322.9 | false |
| PFOS_1 | 499.0 / 80.0 | 3.05 | 663393.11 | 848.909424 | 242.7 | true |
| PFOS_2 | 499.0 / 99.0 | 3.05 | 122846.93 | 883.759256 | 364.1 | false |
| PFDA_1 | 513.0 / 469.0 | 3.40 | 518015.17 | 993.565292 | 343.0 | false |
| PFDA_2 | 513.0 / 219.0 | 3.41 | 21682.87 | 898.454706 | 172.0 | false |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | 513657.73 | 945.238689 | 227.0 | false |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | 24340.58 | 853.408516 | 164.8 | true |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | 482306.74 | 1005.730822 | 233.1 | false |
| PFDoA_2 | 613.0 / 319.0 | 4.01 | 76159.29 | 983.797996 | 206.3 | false |
| PFTrDA_1 | 663.0 / 619.0 | 4.25 | 458900.12 | 1016.995563 | 304.9 | false |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | 29104.92 | 1017.066538 | 254.6 | false |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | 510091.48 | 1006.665369 | 628.7 | false |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | 23391.32 | 964.000724 | 361.4 | false |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.56 | 85978.48 | 1038.070101 | 656.1 | false |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.56 | 47649.73 | 1030.221581 | 401.3 | false |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.72 | 93212.32 | 932.896900 | 545.1 | false |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.72 | 5846.35 | 992.807735 | 145.7 | false |
| PFBA | 213.0 / 169.0 | 1.17 | 710407.76 | 911.339203 | 406.5 | true |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:29:26 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY41 CCV | **Injection Vial** | 18 |
| **Sample ID** | CCV | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:41:46 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | 419426.83 | 950.847656 | 366.8 | false |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 123017.79 | 945.017353 | 254.1 | false |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 331291.81 | 965.269441 | 60.6 | false |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 24655.96 | 966.044767 | 64.0 | false |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | 312060.46 | 945.477863 | 147.0 | false |
| PFHpA_2 | 363.0 / 169.0 | 2.26 | 6603.21 | 965.196317 | 134.4 | false |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | 459490.19 | 993.450506 | 325.0 | false |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | 127613.67 | 981.879581 | 520.2 | false |
| PFOA_1 | 413.0 / 369.0 | 2.67 | 417824.47 | 929.030152 | 269.2 | false |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 25684.72 | 900.588864 | 235.8 | false |
| PFNA_1 | 463.0 / 419.0 | 3.06 | 385489.27 | 987.821461 | 292.8 | true |
| PFNA_2 | 463.0 / 219.0 | 3.06 | 113278.04 | 945.261294 | 234.4 | false |
| PFOS_1 | 499.0 / 80.0 | 3.06 | 615264.63 | 934.607855 | 239.1 | true |
| PFOS_2 | 499.0 / 99.0 | 3.06 | 111196.81 | 949.403596 | 392.9 | false |
| PFDA_1 | 513.0 / 469.0 | 3.41 | 462775.90 | 978.375017 | 321.0 | true |
| PFDA_2 | 513.0 / 219.0 | 3.41 | 22733.42 | 1043.552710 | 165.9 | false |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | 448524.86 | 832.529989 | 185.5 | false |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | 24312.98 | 853.891854 | 129.9 | false |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | 451072.31 | 998.337174 | 218.4 | false |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | 74642.18 | 1023.050484 | 214.7 | false |
| PFTrDA_1 | 663.0 / 619.0 | 4.26 | 421167.65 | 983.863398 | 325.8 | false |
| PFTrDA_2 | 663.0 / 169.0 | 4.26 | 27947.52 | 1029.279993 | 232.3 | false |
| PFTeDA_1 | 713.0 / 669.0 | 4.48 | 483397.18 | 1005.405463 | 566.9 | false |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | 22313.22 | 969.105595 | 363.7 | false |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | 76784.02 | 1066.027098 | 667.5 | false |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | 42108.39 | 1046.776092 | 501.1 | false |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | 83262.86 | 968.096783 | 487.0 | false |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | 5303.64 | 1041.007902 | 170.3 | false |
| PFBA | 213.0 / 169.0 | 1.16 | 689115.20 | 987.885594 | 437.4 | true |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:15:55 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY45 ICC | **Injection Vial** | 10 |
| **Sample ID** | ICC | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T00:03:55 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.17 | 99817.54 | 256.423433 | 1410.3 | false |
| 13C2-PFDoA | 615.0 / 570.0 | 4.00 | 124103.43 | 236.412962 | 1631.1 | false |
| d3-MeFOSAA | 573.0 / 419.0 | 3.55 | 19882.84 | 229.007354 | 184.4 | false |
| d5-EtFOSAA | 589.0 / 419.0 | 3.71 | 24121.66 | 244.394489 | 207.5 | false |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 86418.60 | 257.007980 | 717.7 | false |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 95983.29 | 257.575529 | 756.1 | false |
| 13C8-PFOA | 421.0 / 376.0 | 2.66 | 104540.39 | 253.920137 | 1500.9 | false |
| 13C9-PFNA | 472.0 / 427.0 | 3.04 | 110330.12 | 266.243110 | 794.1 | false |
| 13C6-PFDA | 519.0 / 474.0 | 3.39 | 115002.52 | 253.349129 | 987.0 | false |
| 13C7-PFUnA | 570.0 / 525.0 | 3.71 | 117656.88 | 245.125330 | 535.5 | false |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.47 | 107999.85 | 231.378794 | 2000.8 | false |
| 13C3-PFBS | 302.0 / 99.0 | 1.53 | 38003.92 | 214.031789 | 493.3 | false |
| 13C3-PFHxS | 402.0 / 99.0 | 2.27 | 28928.15 | 204.130881 | 429.5 | false |
| 13C8-PFOS | 507.0 / 99.0 | 3.03 | 37383.49 | 237.268489 | 234.1 | false |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:16:01 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY41 CCV | **Injection Vial** | 18 |
| **Sample ID** | CCV | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:41:46 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.16 | 90965.87 | 261.012832 | 1502.6 | false |
| 13C2-PFDoA | 615.0 / 570.0 | 4.01 | 116929.07 | 236.565854 | 1460.0 | false |
| d3-MeFOSAA | 573.0 / 419.0 | 3.56 | 17295.58 | 243.437952 | 146.5 | false |
| d5-EtFOSAA | 589.0 / 419.0 | 3.72 | 20728.50 | 256.645799 | 177.7 | false |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 78259.39 | 248.973663 | 558.6 | false |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 88296.14 | 253.470989 | 632.9 | false |
| 13C8-PFOA | 421.0 / 376.0 | 2.66 | 95622.05 | 248.455544 | 1390.4 | false |
| 13C9-PFNA | 472.0 / 427.0 | 3.05 | 95037.17 | 245.332675 | 1089.1 | false |
| 13C6-PFDA | 519.0 / 474.0 | 3.40 | 104372.72 | 244.197461 | 2445.0 | false |
| 13C7-PFUnA | 570.0 / 525.0 | 3.72 | 117457.22 | 259.891843 | 562.5 | false |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.48 | 102476.42 | 233.166654 | 1458.1 | false |
| 13C3-PFBS | 302.0 / 99.0 | 1.54 | 33569.60 | 231.035155 | 484.6 | false |
| 13C3-PFHxS | 402.0 / 99.0 | 2.28 | 27115.16 | 233.820301 | 270.6 | false |
| 13C8-PFOS | 507.0 / 99.0 | 3.04 | 31781.43 | 246.499378 | 231.9 | false |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/08/2018 2:29:55 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY45 ICC | **Injection Vial** | 10 |
| **Sample ID** | ICC | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T00:03:55 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.55 | PFBS | 0.292 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | PFHxA | 0.078 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.26 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | PFHpA | 0.018 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | PFHxS | 0.290 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.67 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.67 | PFOA | 0.067 | 0.064 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.05 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.05 | PFNA | 0.318 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.05 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.05 | PFOS | 0.185 | 0.177 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.40 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.41 | PFDA | 0.042 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | PFUnA | 0.047 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.01 | PFDoA | 0.158 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.25 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | PFTrDA | 0.063 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | PFTeDA | 0.046 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.56 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.56 | NMeFOSAA | 0.554 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.72 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.72 | NEtFOSAA | 0.063 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.17 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/08/2018 2:30:01 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY41 CCV | **Injection Vial** | 18 |
| **Sample ID** | CCV | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:41:46 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.55 | PFBS | 0.293 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | PFHxA | 0.074 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.26 | PFHpA | 0.021 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | PFHxS | 0.278 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.67 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.67 | PFOA | 0.062 | 0.064 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.06 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.06 | PFNA | 0.294 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.06 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.06 | PFOS | 0.181 | 0.177 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.41 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.41 | PFDA | 0.049 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | PFUnA | 0.054 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | PFDoA | 0.166 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.26 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.26 | PFTrDA | 0.066 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.48 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | PFTeDA | 0.046 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | NMeFOSAA | 0.548 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | NEtFOSAA | 0.064 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.16 | | | | |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:30:29 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY45 ICC | **Injection Vial** | 10 |
| **Sample ID** | ICC | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T00:03:55 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | 13C3-PFBS | 302.0 / 99.0 | 38003.92 | 232.25 |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 13C3-PFBS | 302.0 / 99.0 | 38003.92 | 232.25 |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 13C5-PFHxA | 318.0 / 273.0 | 86418.60 | 250.00 |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 13C5-PFHxA | 318.0 / 273.0 | 86418.60 | 250.00 |
| PFHpA_1 | 363.0 / 319.0 | 2.26 | 13C8-PFOA | 421.0 / 376.0 | 104540.39 | 250.00 |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | 13C8-PFOA | 421.0 / 376.0 | 104540.39 | 250.00 |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | 13C3-PFHxS | 402.0 / 99.0 | 28928.15 | 236.50 |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | 13C3-PFHxS | 402.0 / 99.0 | 28928.15 | 236.50 |
| PFOA_1 | 413.0 / 369.0 | 2.67 | 13C8-PFOA | 421.0 / 376.0 | 104540.39 | 250.00 |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 13C8-PFOA | 421.0 / 376.0 | 104540.39 | 250.00 |
| PFNA_1 | 463.0 / 419.0 | 3.05 | 13C9-PFNA | 472.0 / 427.0 | 110330.12 | 250.00 |
| PFNA_2 | 463.0 / 219.0 | 3.05 | 13C9-PFNA | 472.0 / 427.0 | 110330.12 | 250.00 |
| PFOS_1 | 499.0 / 80.0 | 3.05 | 13C8-PFOS | 507.0 / 99.0 | 38074.28 | 239.25 |
| PFOS_2 | 499.0 / 99.0 | 3.05 | 13C8-PFOS | 507.0 / 99.0 | 38074.28 | 239.25 |
| PFDA_1 | 513.0 / 469.0 | 3.40 | 13C6-PFDA | 519.0 / 474.0 | 115002.52 | 250.00 |
| PFDA_2 | 513.0 / 219.0 | 3.41 | 13C6-PFDA | 519.0 / 474.0 | 115002.52 | 250.00 |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | 13C7-PFUnA | 570.0 / 525.0 | 117656.88 | 250.00 |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | 13C7-PFUnA | 570.0 / 525.0 | 117656.88 | 250.00 |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | 13C2-PFDoA | 615.0 / 570.0 | 124103.43 | 250.00 |
| PFDoA_2 | 613.0 / 319.0 | 4.01 | 13C2-PFDoA | 615.0 / 570.0 | 124103.43 | 250.00 |
| PFTrDA_1 | 663.0 / 619.0 | 4.25 | 13C2-PFTeDA | 715.0 / 670.0 | 107999.85 | 250.00 |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | 13C2-PFTeDA | 715.0 / 670.0 | 107999.85 | 250.00 |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | 13C2-PFTeDA | 715.0 / 670.0 | 107999.85 | 250.00 |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | 13C2-PFTeDA | 715.0 / 670.0 | 107999.85 | 250.00 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.56 | d3-MeFOSAA | 573.0 / 419.0 | 19882.84 | 250.00 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.56 | d3-MeFOSAA | 573.0 / 419.0 | 19882.84 | 250.00 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.72 | d5-EtFOSAA | 589.0 / 419.0 | 24121.66 | 250.00 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.72 | d5-EtFOSAA | 589.0 / 419.0 | 24121.66 | 250.00 |
| PFBA | 213.0 / 169.0 | 1.17 | 13C4-PFBA | 217.0 / 172.0 | 99817.54 | 250.00 |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:30:43 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY41 CCV | **Injection Vial** | 18 |
| **Sample ID** | CCV | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:41:46 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | 13C3-PFBS | 302.0 / 99.0 | 33569.60 | 232.25 |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 13C3-PFBS | 302.0 / 99.0 | 33569.60 | 232.25 |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 13C5-PFHxA | 318.0 / 273.0 | 78259.39 | 250.00 |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 13C5-PFHxA | 318.0 / 273.0 | 78259.39 | 250.00 |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | 13C8-PFOA | 421.0 / 376.0 | 95622.05 | 250.00 |
| PFHpA_2 | 363.0 / 169.0 | 2.26 | 13C8-PFOA | 421.0 / 376.0 | 95622.05 | 250.00 |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | 13C3-PFHxS | 402.0 / 99.0 | 27115.16 | 236.50 |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | 13C3-PFHxS | 402.0 / 99.0 | 27115.16 | 236.50 |
| PFOA_1 | 413.0 / 369.0 | 2.67 | 13C8-PFOA | 421.0 / 376.0 | 95622.05 | 250.00 |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 13C8-PFOA | 421.0 / 376.0 | 95622.05 | 250.00 |
| PFNA_1 | 463.0 / 419.0 | 3.06 | 13C9-PFNA | 472.0 / 427.0 | 95037.17 | 250.00 |
| PFNA_2 | 463.0 / 219.0 | 3.06 | 13C9-PFNA | 472.0 / 427.0 | 95037.17 | 250.00 |
| PFOS_1 | 499.0 / 80.0 | 3.06 | 13C8-PFOS | 507.0 / 99.0 | 32089.81 | 239.25 |
| PFOS_2 | 499.0 / 99.0 | 3.06 | 13C8-PFOS | 507.0 / 99.0 | 32089.81 | 239.25 |
| PFDA_1 | 513.0 / 469.0 | 3.41 | 13C6-PFDA | 519.0 / 474.0 | 104372.72 | 250.00 |
| PFDA_2 | 513.0 / 219.0 | 3.41 | 13C6-PFDA | 519.0 / 474.0 | 104372.72 | 250.00 |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | 13C7-PFUnA | 570.0 / 525.0 | 117457.22 | 250.00 |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | 13C7-PFUnA | 570.0 / 525.0 | 117457.22 | 250.00 |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | 13C2-PFDoA | 615.0 / 570.0 | 116929.07 | 250.00 |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | 13C2-PFDoA | 615.0 / 570.0 | 116929.07 | 250.00 |
| PFTrDA_1 | 663.0 / 619.0 | 4.26 | 13C2-PFTeDA | 715.0 / 670.0 | 102476.42 | 250.00 |
| PFTrDA_2 | 663.0 / 169.0 | 4.26 | 13C2-PFTeDA | 715.0 / 670.0 | 102476.42 | 250.00 |
| PFTeDA_1 | 713.0 / 669.0 | 4.48 | 13C2-PFTeDA | 715.0 / 670.0 | 102476.42 | 250.00 |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | 13C2-PFTeDA | 715.0 / 670.0 | 102476.42 | 250.00 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | d3-MeFOSAA | 573.0 / 419.0 | 17295.58 | 250.00 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | d3-MeFOSAA | 573.0 / 419.0 | 17295.58 | 250.00 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | d5-EtFOSAA | 589.0 / 419.0 | 20728.50 | 250.00 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | d5-EtFOSAA | 589.0 / 419.0 | 20728.50 | 250.00 |
| PFBA | 213.0 / 169.0 | 1.16 | 13C4-PFBA | 217.0 / 172.0 | 90965.87 | 250.00 |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:16:35 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY45 ICC | **Injection Vial** | 10 |
| **Sample ID** | ICC | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T00:03:55 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.17 | 13C3-PFBA | 216.0 / 172.0 | 59885.14 | 250.00 |
| 13C2-PFDoA | 615.0 / 570.0 | 4.00 | 13C2-PFDA | 515.0 / 470.0 | 113766.69 | 250.00 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.55 | 13C4-PFOS | 503.0 / 99.0 | 37275.00 | 239.25 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.71 | 13C4-PFOS | 503.0 / 99.0 | 37275.00 | 239.25 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 13C2-PFOA | 415.0 / 370.0 | 94996.84 | 250.00 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 13C2-PFOA | 415.0 / 370.0 | 94996.84 | 250.00 |
| 13C8-PFOA | 421.0 / 376.0 | 2.66 | 13C2-PFOA | 415.0 / 370.0 | 94996.84 | 250.00 |
| 13C9-PFNA | 472.0 / 427.0 | 3.04 | 13C2-PFOA | 415.0 / 370.0 | 94996.84 | 250.00 |
| 13C6-PFDA | 519.0 / 474.0 | 3.39 | 13C2-PFDA | 515.0 / 470.0 | 113766.69 | 250.00 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.71 | 13C2-PFDA | 515.0 / 470.0 | 113766.69 | 250.00 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.47 | 13C2-PFDA | 515.0 / 470.0 | 113766.69 | 250.00 |
| 13C3-PFBS | 302.0 / 99.0 | 1.53 | 13C4-PFOS | 503.0 / 99.0 | 37275.00 | 239.25 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.27 | 13C4-PFOS | 503.0 / 99.0 | 37275.00 | 239.25 |
| 13C8-PFOS | 507.0 / 99.0 | 3.03 | 13C4-PFOS | 503.0 / 99.0 | 37275.00 | 239.25 |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:16:41 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY41 CCV | **Injection Vial** | 18 |
| **Sample ID** | CCV | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:41:46 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.16 | 13C3-PFBA | 216.0 / 172.0 | 53615.03 | 250.00 |
| 13C2-PFDoA | 615.0 / 570.0 | 4.01 | 13C2-PFDA | 515.0 / 470.0 | 107120.62 | 250.00 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.56 | 13C4-PFOS | 503.0 / 99.0 | 30502.51 | 239.25 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.72 | 13C4-PFOS | 503.0 / 99.0 | 30502.51 | 239.25 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 13C2-PFOA | 415.0 / 370.0 | 88803.80 | 250.00 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 13C2-PFOA | 415.0 / 370.0 | 88803.80 | 250.00 |
| 13C8-PFOA | 421.0 / 376.0 | 2.66 | 13C2-PFOA | 415.0 / 370.0 | 88803.80 | 250.00 |
| 13C9-PFNA | 472.0 / 427.0 | 3.05 | 13C2-PFOA | 415.0 / 370.0 | 88803.80 | 250.00 |
| 13C6-PFDA | 519.0 / 474.0 | 3.40 | 13C2-PFDA | 515.0 / 470.0 | 107120.62 | 250.00 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.72 | 13C2-PFDA | 515.0 / 470.0 | 107120.62 | 250.00 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.48 | 13C2-PFDA | 515.0 / 470.0 | 107120.62 | 250.00 |
| 13C3-PFBS | 302.0 / 99.0 | 1.54 | 13C4-PFOS | 503.0 / 99.0 | 30502.51 | 239.25 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.28 | 13C4-PFOS | 503.0 / 99.0 | 30502.51 | 239.25 |
| 13C8-PFOS | 507.0 / 99.0 | 3.04 | 13C4-PFOS | 503.0 / 99.0 | 30502.51 | 239.25 |

# Raw Analytical Data

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:31:23 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY46 IB | **Injection Vial** | 9 |
| **Sample ID** | Instrument Blank | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:53:03 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | N/A | N/A | N/A | N/A | true |
| PFBS_2 | 298.9 / 99.0 | N/A | N/A | N/A | N/A | true |
| PFHxA_1 | 313.0 / 269.0 | N/A | N/A | N/A | N/A | true |
| PFHxA_2 | 313.0 / 119.0 | N/A | N/A | N/A | N/A | true |
| PFHpA_1 | 363.0 / 319.0 | N/A | N/A | N/A | N/A | true |
| PFHpA_2 | 363.0 / 169.0 | N/A | N/A | N/A | N/A | true |
| PFHxS_1 | 399.0 / 80.0 | N/A | N/A | N/A | N/A | true |
| PFHxS_2 | 399.0 / 99.0 | N/A | N/A | N/A | N/A | true |
| PFOA_1 | 413.0 / 369.0 | N/A | N/A | N/A | N/A | true |
| PFOA_2 | 413.0 / 169.0 | N/A | N/A | N/A | N/A | true |
| PFNA_1 | 463.0 / 419.0 | N/A | N/A | N/A | N/A | true |
| PFNA_2 | 463.0 / 219.0 | N/A | N/A | N/A | N/A | true |
| PFOS_1 | 499.0 / 80.0 | N/A | N/A | N/A | N/A | true |
| PFOS_2 | 499.0 / 99.0 | N/A | N/A | N/A | N/A | true |
| PFDA_1 | 513.0 / 469.0 | N/A | N/A | N/A | N/A | true |
| PFDA_2 | 513.0 / 219.0 | N/A | N/A | N/A | N/A | true |
| PFUnA_1 | 563.0 / 519.0 | N/A | N/A | N/A | N/A | true |
| PFUnA_2 | 563.0 / 269.0 | N/A | N/A | N/A | N/A | true |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | 4402.13 | 12.800877 | 21.8 | false |
| PFDoA_2 | 613.0 / 319.0 | 4.01 | 514.85 | 14.389925 | 11.8 | false |
| PFTrDA_1 | 663.0 / 619.0 | N/A | N/A | N/A | N/A | true |
| PFTrDA_2 | 663.0 / 169.0 | N/A | N/A | N/A | N/A | true |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | 3264.21 | 8.592483 | 61.2 | false |
| PFTeDA_2 | 713.0 / 169.0 | 4.45 | 221.52 | 15.214296 | 16.2 | false |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.55 | 1471.61 | 8.916310 | 31.3 | false |
| NMeFOSAA_2 | 570.0 / 512.0 | N/A | N/A | N/A | N/A | true |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.72 | 1747.68 | 57.399717 | 42.7 | false |
| NEtFOSAA_2 | 584.0 / 483.0 | N/A | N/A | N/A | N/A | true |
| PFBA | 213.0 / 169.0 | N/A | N/A | N/A | N/A | true |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:31:30 PM

| | | | |
|---|---|---|---|
| **Sample Name** | CR635PB-FS(3) | **Injection Vial** | 15 |
| **Sample ID** | Procedural Blank | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:09:11 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | N/A | N/A | N/A | N/A | true |
| PFBS_2 | 298.9 / 99.0 | N/A | N/A | N/A | N/A | true |
| PFHxA_1 | 313.0 / 269.0 | N/A | N/A | N/A | N/A | true |
| PFHxA_2 | 313.0 / 119.0 | N/A | N/A | N/A | N/A | true |
| PFHpA_1 | 363.0 / 319.0 | N/A | N/A | N/A | N/A | true |
| PFHpA_2 | 363.0 / 169.0 | N/A | N/A | N/A | N/A | true |
| PFHxS_1 | 399.0 / 80.0 | N/A | N/A | N/A | N/A | true |
| PFHxS_2 | 399.0 / 99.0 | N/A | N/A | N/A | N/A | true |
| PFOA_1 | 413.0 / 369.0 | 2.66 | 103391.31 | 316.547349 | 107.2 | true |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 7266.45 | 341.798814 | 82.0 | false |
| PFNA_1 | 463.0 / 419.0 | N/A | N/A | N/A | N/A | true |
| PFNA_2 | 463.0 / 219.0 | N/A | N/A | N/A | N/A | true |
| PFOS_1 | 499.0 / 80.0 | 3.06 | 30101.55 | 52.703346 | 38.3 | true |
| PFOS_2 | 499.0 / 99.0 | 3.05 | 7003.95 | 71.132476 | 46.2 | false |
| PFDA_1 | 513.0 / 469.0 | N/A | N/A | N/A | N/A | true |
| PFDA_2 | 513.0 / 219.0 | N/A | N/A | N/A | N/A | true |
| PFUnA_1 | 563.0 / 519.0 | N/A | N/A | N/A | N/A | true |
| PFUnA_2 | 563.0 / 269.0 | N/A | N/A | N/A | N/A | true |
| PFDoA_1 | 613.0 / 569.0 | N/A | N/A | N/A | N/A | true |
| PFDoA_2 | 613.0 / 319.0 | N/A | N/A | N/A | N/A | true |
| PFTrDA_1 | 663.0 / 619.0 | N/A | N/A | N/A | N/A | true |
| PFTrDA_2 | 663.0 / 169.0 | N/A | N/A | N/A | N/A | true |
| PFTeDA_1 | 713.0 / 669.0 | N/A | N/A | N/A | N/A | true |
| PFTeDA_2 | 713.0 / 169.0 | N/A | N/A | N/A | N/A | true |
| NMeFOSAA_1 | 570.0 / 419.0 | N/A | N/A | N/A | N/A | true |
| NMeFOSAA_2 | 570.0 / 512.0 | N/A | N/A | N/A | N/A | true |
| NEtFOSAA_1 | 584.0 / 419.0 | N/A | N/A | N/A | N/A | true |
| NEtFOSAA_2 | 584.0 / 483.0 | N/A | N/A | N/A | N/A | true |
| PFBA | 213.0 / 169.0 | 1.16 | 222087.23 | 245.099127 | 191.0 | true |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:31:39 PM

| | | | |
|---|---|---|---|
| **Sample Name** | CR636LCS-FS(3) | **Injection Vial** | 16 |
| **Sample ID** | Laboratory Control Sample | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:20:03 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | 895322.28 | 2595.752655 | 510.5 | false |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 257475.93 | 2526.499077 | 351.0 | false |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 668420.12 | 2612.499737 | 92.0 | false |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 48273.05 | 2512.160913 | 87.3 | false |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | 666571.59 | 2564.779567 | 212.6 | false |
| PFHpA_2 | 363.0 / 169.0 | 2.26 | 13613.64 | 2653.168491 | 197.4 | false |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | 936993.31 | 2623.971884 | 343.1 | false |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | 269266.32 | 2682.722588 | 675.8 | false |
| PFOA_1 | 413.0 / 369.0 | 2.67 | 966926.48 | 2858.341899 | 411.0 | true |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 58949.25 | 2760.070116 | 271.5 | false |
| PFNA_1 | 463.0 / 419.0 | 3.06 | 816455.23 | 2710.676017 | 367.6 | true |
| PFNA_2 | 463.0 / 219.0 | 3.06 | 253336.56 | 2761.419767 | 443.1 | false |
| PFOS_1 | 499.0 / 80.0 | 3.05 | 1274330.01 | 2690.814481 | 268.4 | true |
| PFOS_2 | 499.0 / 99.0 | 3.05 | 240239.16 | 2849.562025 | 485.0 | false |
| PFDA_1 | 513.0 / 469.0 | 3.41 | 911776.83 | 2588.121003 | 468.5 | false |
| PFDA_2 | 513.0 / 219.0 | 3.41 | 40794.94 | 2604.517744 | 206.2 | false |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | 944472.90 | 2385.371923 | 316.1 | false |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | 51390.15 | 2557.105030 | 194.2 | false |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | 921902.05 | 2717.518590 | 267.8 | false |
| PFDoA_2 | 613.0 / 319.0 | 4.01 | 149040.44 | 2713.941263 | 247.9 | false |
| PFTrDA_1 | 663.0 / 619.0 | 4.25 | 903126.37 | 2956.288279 | 362.0 | false |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | 56789.83 | 2944.735563 | 289.2 | false |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | 952814.67 | 2784.441580 | 903.6 | false |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | 45918.83 | 2794.839468 | 463.3 | false |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.56 | 161073.28 | 2951.330197 | 1091.3 | false |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.56 | 85830.76 | 2816.096055 | 502.9 | false |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.72 | 161059.77 | 2827.611565 | 665.8 | false |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.72 | 12226.00 | 3401.899408 | 551.8 | false |
| PFBA | 213.0 / 169.0 | 1.16 | 1330929.58 | 3090.925151 | 430.7 | true |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:31:45 PM

| | | | |
|---|---|---|---|
| **Sample Name** | J7401-FS(3) | **Injection Vial** | 17 |
| **Sample ID** | NASB-BLL15-GWFB01- | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:30:55 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | N/A | N/A | N/A | N/A | true |
| PFBS_2 | 298.9 / 99.0 | N/A | N/A | N/A | N/A | true |
| PFHxA_1 | 313.0 / 269.0 | N/A | N/A | N/A | N/A | true |
| PFHxA_2 | 313.0 / 119.0 | N/A | N/A | N/A | N/A | true |
| PFHpA_1 | 363.0 / 319.0 | N/A | N/A | N/A | N/A | true |
| PFHpA_2 | 363.0 / 169.0 | N/A | N/A | N/A | N/A | true |
| PFHxS_1 | 399.0 / 80.0 | N/A | N/A | N/A | N/A | true |
| PFHxS_2 | 399.0 / 99.0 | N/A | N/A | N/A | N/A | true |
| PFOA_1 | 413.0 / 369.0 | 2.66 | 68648.58 | 340.413501 | 80.4 | false |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 4054.00 | 314.812626 | 50.9 | false |
| PFNA_1 | 463.0 / 419.0 | N/A | N/A | N/A | N/A | true |
| PFNA_2 | 463.0 / 219.0 | N/A | N/A | N/A | N/A | true |
| PFOS_1 | 499.0 / 80.0 | 3.04 | 9488.94 | 23.198223 | 17.0 | false |
| PFOS_2 | 499.0 / 99.0 | 3.05 | 2260.08 | 33.441324 | 33.1 | true |
| PFDA_1 | 513.0 / 469.0 | N/A | N/A | N/A | N/A | true |
| PFDA_2 | 513.0 / 219.0 | N/A | N/A | N/A | N/A | true |
| PFUnA_1 | 563.0 / 519.0 | N/A | N/A | N/A | N/A | true |
| PFUnA_2 | 563.0 / 269.0 | N/A | N/A | N/A | N/A | true |
| PFDoA_1 | 613.0 / 569.0 | N/A | N/A | N/A | N/A | true |
| PFDoA_2 | 613.0 / 319.0 | N/A | N/A | N/A | N/A | true |
| PFTrDA_1 | 663.0 / 619.0 | N/A | N/A | N/A | N/A | true |
| PFTrDA_2 | 663.0 / 169.0 | N/A | N/A | N/A | N/A | true |
| PFTeDA_1 | 713.0 / 669.0 | N/A | N/A | N/A | N/A | true |
| PFTeDA_2 | 713.0 / 169.0 | N/A | N/A | N/A | N/A | true |
| NMeFOSAA_1 | 570.0 / 419.0 | N/A | N/A | N/A | N/A | true |
| NMeFOSAA_2 | 570.0 / 512.0 | N/A | N/A | N/A | N/A | true |
| NEtFOSAA_1 | 584.0 / 419.0 | N/A | N/A | N/A | N/A | true |
| NEtFOSAA_2 | 584.0 / 483.0 | N/A | N/A | N/A | N/A | true |
| PFBA | 213.0 / 169.0 | 1.16 | 217707.16 | 613.266269 | 265.8 | true |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:17:11 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY46 IB | **Injection Vial** | 9 |
| **Sample ID** | Instrument Blank | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:53:03 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.17 | 93246.92 | 257.713508 | 1725.4 | false |
| 13C2-PFDoA | 615.0 / 570.0 | 4.00 | 122579.14 | 269.854612 | 884.9 | false |
| d3-MeFOSAA | 573.0 / 419.0 | 3.55 | 18110.41 | 252.052341 | 183.4 | false |
| d5-EtFOSAA | 589.0 / 419.0 | 3.71 | 25161.81 | 308.047467 | 199.4 | false |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 77701.35 | 252.343368 | 483.2 | false |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 85516.54 | 250.601124 | 902.2 | false |
| 13C8-PFOA | 421.0 / 376.0 | 2.66 | 100353.03 | 266.175126 | 1461.8 | false |
| 13C9-PFNA | 472.0 / 427.0 | 3.04 | 94097.76 | 247.963358 | 786.8 | false |
| 13C6-PFDA | 519.0 / 474.0 | 3.40 | 109158.14 | 277.903479 | 1054.4 | false |
| 13C7-PFUnA | 570.0 / 525.0 | 3.71 | 107435.59 | 258.669262 | 697.4 | false |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.47 | 100055.30 | 247.722984 | 1339.7 | false |
| 13C3-PFBS | 302.0 / 99.0 | 1.54 | 34261.46 | 233.156299 | 571.8 | false |
| 13C3-PFHxS | 402.0 / 99.0 | 2.27 | 27581.07 | 235.174701 | 372.3 | false |
| 13C8-PFOS | 507.0 / 99.0 | 3.04 | 32015.05 | 245.530775 | 241.4 | false |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:17:18 PM

| | | | |
|---|---|---|---|
| **Sample Name** | CR635PB-FS(3) | **Injection Vial** | 15 |
| **Sample ID** | Procedural Blank | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:09:11 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.16 | 71030.66 | 171.034124 | 1463.7 | false |
| 13C2-PFDoA | 615.0 / 570.0 | 4.01 | 93792.46 | 190.427014 | 788.9 | false |
| d3-MeFOSAA | 573.0 / 419.0 | 3.56 | 13206.79 | 196.522869 | 145.2 | false |
| d5-EtFOSAA | 589.0 / 419.0 | 3.72 | 15062.34 | 197.161221 | 146.6 | false |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 65370.57 | 210.360956 | 512.2 | false |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 71882.63 | 208.725921 | 490.4 | false |
| 13C8-PFOA | 421.0 / 376.0 | 2.65 | 75557.11 | 198.578340 | 1014.3 | false |
| 13C9-PFNA | 472.0 / 427.0 | 3.04 | 81494.30 | 212.791850 | 901.6 | false |
| 13C6-PFDA | 519.0 / 474.0 | 3.40 | 86727.98 | 203.631249 | 719.0 | false |
| 13C7-PFUnA | 570.0 / 525.0 | 3.71 | 85026.74 | 188.798927 | 554.1 | false |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.47 | 82715.61 | 188.869145 | 1509.8 | false |
| 13C3-PFBS | 302.0 / 99.0 | 1.53 | 28276.46 | 205.740457 | 354.6 | false |
| 13C3-PFHxS | 402.0 / 99.0 | 2.27 | 22722.82 | 207.154829 | 300.5 | false |
| 13C8-PFOS | 507.0 / 99.0 | 3.04 | 25175.04 | 206.431202 | 203.7 | false |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:17:24 PM

| | | | |
|---|---|---|---|
| **Sample Name** | CR636LCS-FS(3) | **Injection Vial** | 16 |
| **Sample ID** | Laboratory Control Sample | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:20:03 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.17 | 65980.29 | 187.536601 | 1159.0 | false |
| 13C2-PFDoA | 615.0 / 570.0 | 4.00 | 87597.01 | 208.143303 | 748.2 | false |
| d3-MeFOSAA | 573.0 / 419.0 | 3.55 | 13189.49 | 230.634618 | 111.9 | false |
| d5-EtFOSAA | 589.0 / 419.0 | 3.71 | 13336.29 | 205.137365 | 154.2 | false |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 57154.15 | 212.219007 | 582.3 | false |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 70373.11 | 235.783171 | 680.1 | false |
| 13C8-PFOA | 421.0 / 376.0 | 2.66 | 72193.29 | 218.930883 | 1075.1 | false |
| 13C9-PFNA | 472.0 / 427.0 | 3.04 | 72001.82 | 216.932637 | 832.2 | false |
| 13C6-PFDA | 519.0 / 474.0 | 3.39 | 76586.01 | 210.449145 | 1221.5 | false |
| 13C7-PFUnA | 570.0 / 525.0 | 3.71 | 83167.11 | 216.126566 | 656.6 | false |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.47 | 72857.69 | 194.698001 | 1133.0 | false |
| 13C3-PFBS | 302.0 / 99.0 | 1.54 | 25709.96 | 219.824882 | 365.5 | false |
| 13C3-PFHxS | 402.0 / 99.0 | 2.27 | 20304.92 | 217.527882 | 259.9 | false |
| 13C8-PFOS | 507.0 / 99.0 | 3.04 | 22723.04 | 218.953735 | 191.2 | false |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 29/08/2018 2:17:30 PM

| | | | |
|---|---|---|---|
| **Sample Name** | J7401-FS(3) | **Injection Vial** | 17 |
| **Sample ID** | NASB-BLL15-GW-FB01-080918 | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:30:55 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.16 | 40832.10 | 132.915281 | 1212.1 | false |
| 13C2-PFDoA | 615.0 / 570.0 | 3.99 | 53015.34 | 135.192641 | 812.0 | false |
| d3-MeFOSAA | 573.0 / 419.0 | 3.55 | 8032.84 | 130.833810 | 103.6 | false |
| d5-EtFOSAA | 589.0 / 419.0 | 3.71 | 9621.79 | 137.854296 | 138.6 | false |
| 13C5-PFHxA | 318.0 / 273.0 | 1.84 | 35343.79 | 130.834613 | 333.6 | false |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 40527.32 | 135.371394 | 451.3 | false |
| 13C8-PFOA | 421.0 / 376.0 | 2.65 | 46446.34 | 140.421841 | 1364.5 | false |
| 13C9-PFNA | 472.0 / 427.0 | 3.04 | 42676.28 | 128.186097 | 545.5 | false |
| 13C6-PFDA | 519.0 / 474.0 | 3.39 | 49981.42 | 147.395648 | 477.0 | false |
| 13C7-PFUnA | 570.0 / 525.0 | 3.71 | 51001.03 | 142.237396 | 513.1 | false |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.46 | 44413.47 | 127.373530 | 972.7 | false |
| 13C3-PFBS | 302.0 / 99.0 | 1.53 | 16689.47 | 132.914534 | 344.2 | false |
| 13C3-PFHxS | 402.0 / 99.0 | 2.27 | 13565.05 | 135.359739 | 202.5 | false |
| 13C8-PFOS | 507.0 / 99.0 | 3.03 | 15808.03 | 141.878969 | 119.3 | false |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/08/2018 2:32:15 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY46 IB | **Injection Vial** | 9 |
| **Sample ID** | Instrument Blank | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:53:03 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | N/A | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | N/A | PFBS | N/A | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | N/A | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | N/A | PFHxA | N/A | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | N/A | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | N/A | PFHpA | N/A | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | N/A | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | N/A | PFHxS | N/A | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | N/A | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | N/A | PFOA | N/A | 0.064 | ü |
| PFNA_1 | 463.0 / 419.0 | N/A | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | N/A | PFNA | N/A | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | N/A | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | N/A | PFOS | N/A | 0.177 | ü |
| PFDA_1 | 513.0 / 469.0 | N/A | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | N/A | PFDA | N/A | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | N/A | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | N/A | PFUnA | N/A | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.01 | PFDoA | 0.117 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | N/A | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | N/A | PFTrDA | N/A | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.45 | PFTeDA | 0.068 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.55 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | N/A | NMeFOSAA | N/A | 0.560 | |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.72 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | N/A | NEtFOSAA | N/A | 0.060 | |
| PFBA | 213.0 / 169.0 | N/A | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/08/2018 2:32:22 PM

| | | | |
|---|---|---|---|
| **Sample Name** | CR635PB-FS(3) | **Injection Vial** | 15 |
| **Sample ID** | Procedural Blank | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:09:11 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | N/A | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | N/A | PFBS | N/A | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | N/A | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | N/A | PFHxA | N/A | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | N/A | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | N/A | PFHpA | N/A | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | N/A | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | N/A | PFHxS | N/A | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.66 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.67 | PFOA | 0.070 | 0.064 | ü |
| PFNA_1 | 463.0 / 419.0 | N/A | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | N/A | PFNA | N/A | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.06 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.05 | PFOS | 0.233 | 0.177 | ü |
| PFDA_1 | 513.0 / 469.0 | N/A | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | N/A | PFDA | N/A | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | N/A | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | N/A | PFUnA | N/A | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | N/A | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | N/A | PFDoA | N/A | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | N/A | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | N/A | PFTrDA | N/A | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | N/A | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | N/A | PFTeDA | N/A | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | N/A | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | N/A | NMeFOSAA | N/A | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | N/A | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | N/A | NEtFOSAA | N/A | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.16 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/08/2018 2:32:31 PM

| | | | |
|---|---|---|---|
| **Sample Name** | CR636LCS-FS(3) | **Injection Vial** | 16 |
| **Sample ID** | Laboratory Control Sample | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:20:03 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.55 | PFBS | 0.288 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | PFHxA | 0.072 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.26 | PFHpA | 0.020 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | PFHxS | 0.287 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.67 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.67 | PFOA | 0.061 | 0.064 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.06 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.06 | PFNA | 0.310 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.05 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.05 | PFOS | 0.189 | 0.177 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.41 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.41 | PFDA | 0.045 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | PFUnA | 0.054 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.01 | PFDoA | 0.162 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.25 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | PFTrDA | 0.063 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | PFTeDA | 0.048 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.56 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.56 | NMeFOSAA | 0.533 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.72 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.72 | NEtFOSAA | 0.076 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.16 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/08/2018 2:32:37 PM

| | | | |
|---|---|---|---|
| **Sample Name** | J7401-FS(3) | **Injection Vial** | 17 |
| **Sample ID** | NASB-BLL15-GWFB01- | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:30:55 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | N/A | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | N/A | PFBS | N/A | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | N/A | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | N/A | PFHxA | N/A | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | N/A | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | N/A | PFHpA | N/A | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | N/A | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | N/A | PFHxS | N/A | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.66 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.67 | PFOA | 0.059 | 0.064 | ü |
| PFNA_1 | 463.0 / 419.0 | N/A | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | N/A | PFNA | N/A | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.04 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.05 | PFOS | 0.238 | 0.177 | ü |
| PFDA_1 | 513.0 / 469.0 | N/A | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | N/A | PFDA | N/A | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | N/A | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | N/A | PFUnA | N/A | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | N/A | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | N/A | PFDoA | N/A | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | N/A | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | N/A | PFTrDA | N/A | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | N/A | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | N/A | PFTeDA | N/A | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | N/A | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | N/A | NMeFOSAA | N/A | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | N/A | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | N/A | NEtFOSAA | N/A | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.16 | | | | |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:33:04 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY46 IB | **Injection Vial** | 9 |
| **Sample ID** | Instrument Blank | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:53:03 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | N/A | 13C3-PFBS | 302.0 / 99.0 | 34261.46 | 232.25 |
| PFBS_2 | 298.9 / 99.0 | N/A | 13C3-PFBS | 302.0 / 99.0 | 34261.46 | 232.25 |
| PFHxA_1 | 313.0 / 269.0 | N/A | 13C5-PFHxA | 318.0 / 273.0 | 77701.35 | 250.00 |
| PFHxA_2 | 313.0 / 119.0 | N/A | 13C5-PFHxA | 318.0 / 273.0 | 77701.35 | 250.00 |
| PFHpA_1 | 363.0 / 319.0 | N/A | 13C8-PFOA | 421.0 / 376.0 | 98811.99 | 250.00 |
| PFHpA_2 | 363.0 / 169.0 | N/A | 13C8-PFOA | 421.0 / 376.0 | 98811.99 | 250.00 |
| PFHxS_1 | 399.0 / 80.0 | N/A | 13C3-PFHxS | 402.0 / 99.0 | 27581.07 | 236.50 |
| PFHxS_2 | 399.0 / 99.0 | N/A | 13C3-PFHxS | 402.0 / 99.0 | 27581.07 | 236.50 |
| PFOA_1 | 413.0 / 369.0 | N/A | 13C8-PFOA | 421.0 / 376.0 | 98811.99 | 250.00 |
| PFOA_2 | 413.0 / 169.0 | N/A | 13C8-PFOA | 421.0 / 376.0 | 98811.99 | 250.00 |
| PFNA_1 | 463.0 / 419.0 | N/A | 13C9-PFNA | 472.0 / 427.0 | 94097.76 | 250.00 |
| PFNA_2 | 463.0 / 219.0 | N/A | 13C9-PFNA | 472.0 / 427.0 | 94097.76 | 250.00 |
| PFOS_1 | 499.0 / 80.0 | N/A | 13C8-PFOS | 507.0 / 99.0 | 33043.44 | 239.25 |
| PFOS_2 | 499.0 / 99.0 | N/A | 13C8-PFOS | 507.0 / 99.0 | 33043.44 | 239.25 |
| PFDA_1 | 513.0 / 469.0 | N/A | 13C6-PFDA | 519.0 / 474.0 | 109158.14 | 250.00 |
| PFDA_2 | 513.0 / 219.0 | N/A | 13C6-PFDA | 519.0 / 474.0 | 109158.14 | 250.00 |
| PFUnA_1 | 563.0 / 519.0 | N/A | 13C7-PFUnA | 570.0 / 525.0 | 107435.59 | 250.00 |
| PFUnA_2 | 563.0 / 269.0 | N/A | 13C7-PFUnA | 570.0 / 525.0 | 107435.59 | 250.00 |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | 13C2-PFDoA | 615.0 / 570.0 | 122579.14 | 250.00 |
| PFDoA_2 | 613.0 / 319.0 | 4.01 | 13C2-PFDoA | 615.0 / 570.0 | 122579.14 | 250.00 |
| PFTrDA_1 | 663.0 / 619.0 | N/A | 13C2-PFTeDA | 715.0 / 670.0 | 100055.30 | 250.00 |
| PFTrDA_2 | 663.0 / 169.0 | N/A | 13C2-PFTeDA | 715.0 / 670.0 | 100055.30 | 250.00 |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | 13C2-PFTeDA | 715.0 / 670.0 | 100055.30 | 250.00 |
| PFTeDA_2 | 713.0 / 169.0 | 4.45 | 13C2-PFTeDA | 715.0 / 670.0 | 100055.30 | 250.00 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.55 | d3-MeFOSAA | 573.0 / 419.0 | 18110.41 | 250.00 |
| NMeFOSAA_2 | 570.0 / 512.0 | N/A | d3-MeFOSAA | 573.0 / 419.0 | 18110.41 | 250.00 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.72 | d5-EtFOSAA | 589.0 / 419.0 | 25161.81 | 250.00 |
| NEtFOSAA_2 | 584.0 / 483.0 | N/A | d5-EtFOSAA | 589.0 / 419.0 | 25161.81 | 250.00 |
| PFBA | 213.0 / 169.0 | N/A | 13C4-PFBA | 217.0 / 172.0 | 93246.92 | 250.00 |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:33:13 PM

| | | | |
|---|---|---|---|
| **Sample Name** | CR635PB-FS(3) | **Injection Vial** | 15 |
| **Sample ID** | Procedural Blank | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:09:11 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | N/A | 13C3-PFBS | 302.0 / 99.0 | 28276.46 | 232.25 |
| PFBS_2 | 298.9 / 99.0 | N/A | 13C3-PFBS | 302.0 / 99.0 | 28276.46 | 232.25 |
| PFHxA_1 | 313.0 / 269.0 | N/A | 13C5-PFHxA | 318.0 / 273.0 | 65370.57 | 250.00 |
| PFHxA_2 | 313.0 / 119.0 | N/A | 13C5-PFHxA | 318.0 / 273.0 | 65370.57 | 250.00 |
| PFHpA_1 | 363.0 / 319.0 | N/A | 13C8-PFOA | 421.0 / 376.0 | 75979.50 | 250.00 |
| PFHpA_2 | 363.0 / 169.0 | N/A | 13C8-PFOA | 421.0 / 376.0 | 75979.50 | 250.00 |
| PFHxS_1 | 399.0 / 80.0 | N/A | 13C3-PFHxS | 402.0 / 99.0 | 22722.82 | 236.50 |
| PFHxS_2 | 399.0 / 99.0 | N/A | 13C3-PFHxS | 402.0 / 99.0 | 22722.82 | 236.50 |
| PFOA_1 | 413.0 / 369.0 | 2.66 | 13C8-PFOA | 421.0 / 376.0 | 75979.50 | 250.00 |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 13C8-PFOA | 421.0 / 376.0 | 75979.50 | 250.00 |
| PFNA_1 | 463.0 / 419.0 | N/A | 13C9-PFNA | 472.0 / 427.0 | 81494.30 | 250.00 |
| PFNA_2 | 463.0 / 219.0 | N/A | 13C9-PFNA | 472.0 / 427.0 | 81494.30 | 250.00 |
| PFOS_1 | 499.0 / 80.0 | 3.06 | 13C8-PFOS | 507.0 / 99.0 | 25751.50 | 239.25 |
| PFOS_2 | 499.0 / 99.0 | 3.05 | 13C8-PFOS | 507.0 / 99.0 | 25751.50 | 239.25 |
| PFDA_1 | 513.0 / 469.0 | N/A | 13C6-PFDA | 519.0 / 474.0 | 86727.98 | 250.00 |
| PFDA_2 | 513.0 / 219.0 | N/A | 13C6-PFDA | 519.0 / 474.0 | 86727.98 | 250.00 |
| PFUnA_1 | 563.0 / 519.0 | N/A | 13C7-PFUnA | 570.0 / 525.0 | 85026.74 | 250.00 |
| PFUnA_2 | 563.0 / 269.0 | N/A | 13C7-PFUnA | 570.0 / 525.0 | 85026.74 | 250.00 |
| PFDoA_1 | 613.0 / 569.0 | N/A | 13C2-PFDoA | 615.0 / 570.0 | 93792.46 | 250.00 |
| PFDoA_2 | 613.0 / 319.0 | N/A | 13C2-PFDoA | 615.0 / 570.0 | 93792.46 | 250.00 |
| PFTrDA_1 | 663.0 / 619.0 | N/A | 13C2-PFTeDA | 715.0 / 670.0 | 82715.61 | 250.00 |
| PFTrDA_2 | 663.0 / 169.0 | N/A | 13C2-PFTeDA | 715.0 / 670.0 | 82715.61 | 250.00 |
| PFTeDA_1 | 713.0 / 669.0 | N/A | 13C2-PFTeDA | 715.0 / 670.0 | 82715.61 | 250.00 |
| PFTeDA_2 | 713.0 / 169.0 | N/A | 13C2-PFTeDA | 715.0 / 670.0 | 82715.61 | 250.00 |
| NMeFOSAA_1 | 570.0 / 419.0 | N/A | d3-MeFOSAA | 573.0 / 419.0 | 13206.79 | 250.00 |
| NMeFOSAA_2 | 570.0 / 512.0 | N/A | d3-MeFOSAA | 573.0 / 419.0 | 13206.79 | 250.00 |
| NEtFOSAA_1 | 584.0 / 419.0 | N/A | d5-EtFOSAA | 589.0 / 419.0 | 15062.34 | 250.00 |
| NEtFOSAA_2 | 584.0 / 483.0 | N/A | d5-EtFOSAA | 589.0 / 419.0 | 15062.34 | 250.00 |
| PFBA | 213.0 / 169.0 | 1.16 | 13C4-PFBA | 217.0 / 172.0 | 71030.66 | 250.00 |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:33:18 PM

| | | | |
|---|---|---|---|
| **Sample Name** | CR636LCS-FS(3) | **Injection Vial** | 16 |
| **Sample ID** | Laboratory Control Sample | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:20:03 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | 13C3-PFBS | 302.0 / 99.0 | 25709.96 | 232.25 |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 13C3-PFBS | 302.0 / 99.0 | 25709.96 | 232.25 |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 13C5-PFHxA | 318.0 / 273.0 | 57154.15 | 250.00 |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 13C5-PFHxA | 318.0 / 273.0 | 57154.15 | 250.00 |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | 13C8-PFOA | 421.0 / 376.0 | 69828.82 | 250.00 |
| PFHpA_2 | 363.0 / 169.0 | 2.26 | 13C8-PFOA | 421.0 / 376.0 | 69828.82 | 250.00 |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | 13C3-PFHxS | 402.0 / 99.0 | 20304.92 | 236.50 |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | 13C3-PFHxS | 402.0 / 99.0 | 20304.92 | 236.50 |
| PFOA_1 | 413.0 / 369.0 | 2.67 | 13C8-PFOA | 421.0 / 376.0 | 69828.82 | 250.00 |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 13C8-PFOA | 421.0 / 376.0 | 69828.82 | 250.00 |
| PFNA_1 | 463.0 / 419.0 | 3.06 | 13C9-PFNA | 472.0 / 427.0 | 72001.82 | 250.00 |
| PFNA_2 | 463.0 / 219.0 | 3.06 | 13C9-PFNA | 472.0 / 427.0 | 72001.82 | 250.00 |
| PFOS_1 | 499.0 / 80.0 | 3.05 | 13C8-PFOS | 507.0 / 99.0 | 23158.45 | 239.25 |
| PFOS_2 | 499.0 / 99.0 | 3.05 | 13C8-PFOS | 507.0 / 99.0 | 23158.45 | 239.25 |
| PFDA_1 | 513.0 / 469.0 | 3.41 | 13C6-PFDA | 519.0 / 474.0 | 76586.01 | 250.00 |
| PFDA_2 | 513.0 / 219.0 | 3.41 | 13C6-PFDA | 519.0 / 474.0 | 76586.01 | 250.00 |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | 13C7-PFUnA | 570.0 / 525.0 | 83167.11 | 250.00 |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | 13C7-PFUnA | 570.0 / 525.0 | 83167.11 | 250.00 |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | 13C2-PFDoA | 615.0 / 570.0 | 87597.01 | 250.00 |
| PFDoA_2 | 613.0 / 319.0 | 4.01 | 13C2-PFDoA | 615.0 / 570.0 | 87597.01 | 250.00 |
| PFTrDA_1 | 663.0 / 619.0 | 4.25 | 13C2-PFTeDA | 715.0 / 670.0 | 72857.69 | 250.00 |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | 13C2-PFTeDA | 715.0 / 670.0 | 72857.69 | 250.00 |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | 13C2-PFTeDA | 715.0 / 670.0 | 72857.69 | 250.00 |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | 13C2-PFTeDA | 715.0 / 670.0 | 72857.69 | 250.00 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.56 | d3-MeFOSAA | 573.0 / 419.0 | 13189.49 | 250.00 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.56 | d3-MeFOSAA | 573.0 / 419.0 | 13189.49 | 250.00 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.72 | d5-EtFOSAA | 589.0 / 419.0 | 13336.29 | 250.00 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.72 | d5-EtFOSAA | 589.0 / 419.0 | 13336.29 | 250.00 |
| PFBA | 213.0 / 169.0 | 1.16 | 13C4-PFBA | 217.0 / 172.0 | 65980.29 | 250.00 |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:33:23 PM

| | | | |
|---|---|---|---|
| **Sample Name** | J7401-FS(3) | **Injection Vial** | 17 |
| **Sample ID** | NASB-BLL15-GWFB01- | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:30:55 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | N/A | 13C3-PFBS | 302.0 / 99.0 | 16689.47 | 232.25 |
| PFBS_2 | 298.9 / 99.0 | N/A | 13C3-PFBS | 302.0 / 99.0 | 16689.47 | 232.25 |
| PFHxA_1 | 313.0 / 269.0 | N/A | 13C5-PFHxA | 318.0 / 273.0 | 35343.79 | 250.00 |
| PFHxA_2 | 313.0 / 119.0 | N/A | 13C5-PFHxA | 318.0 / 273.0 | 35343.79 | 250.00 |
| PFHpA_1 | 363.0 / 319.0 | N/A | 13C8-PFOA | 421.0 / 376.0 | 46446.34 | 250.00 |
| PFHpA_2 | 363.0 / 169.0 | N/A | 13C8-PFOA | 421.0 / 376.0 | 46446.34 | 250.00 |
| PFHxS_1 | 399.0 / 80.0 | N/A | 13C3-PFHxS | 402.0 / 99.0 | 13565.05 | 236.50 |
| PFHxS_2 | 399.0 / 99.0 | N/A | 13C3-PFHxS | 402.0 / 99.0 | 13565.05 | 236.50 |
| PFOA_1 | 413.0 / 369.0 | 2.66 | 13C8-PFOA | 421.0 / 376.0 | 46446.34 | 250.00 |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 13C8-PFOA | 421.0 / 376.0 | 46446.34 | 250.00 |
| PFNA_1 | 463.0 / 419.0 | N/A | 13C9-PFNA | 472.0 / 427.0 | 42676.28 | 250.00 |
| PFNA_2 | 463.0 / 219.0 | N/A | 13C9-PFNA | 472.0 / 427.0 | 42676.28 | 250.00 |
| PFOS_1 | 499.0 / 80.0 | 3.04 | 13C8-PFOS | 507.0 / 99.0 | 16748.04 | 239.25 |
| PFOS_2 | 499.0 / 99.0 | 3.05 | 13C8-PFOS | 507.0 / 99.0 | 16748.04 | 239.25 |
| PFDA_1 | 513.0 / 469.0 | N/A | 13C6-PFDA | 519.0 / 474.0 | 49981.42 | 250.00 |
| PFDA_2 | 513.0 / 219.0 | N/A | 13C6-PFDA | 519.0 / 474.0 | 49981.42 | 250.00 |
| PFUnA_1 | 563.0 / 519.0 | N/A | 13C7-PFUnA | 570.0 / 525.0 | 51001.03 | 250.00 |
| PFUnA_2 | 563.0 / 269.0 | N/A | 13C7-PFUnA | 570.0 / 525.0 | 51001.03 | 250.00 |
| PFDoA_1 | 613.0 / 569.0 | N/A | 13C2-PFDoA | 615.0 / 570.0 | 53015.34 | 250.00 |
| PFDoA_2 | 613.0 / 319.0 | N/A | 13C2-PFDoA | 615.0 / 570.0 | 53015.34 | 250.00 |
| PFTrDA_1 | 663.0 / 619.0 | N/A | 13C2-PFTeDA | 715.0 / 670.0 | 44413.47 | 250.00 |
| PFTrDA_2 | 663.0 / 169.0 | N/A | 13C2-PFTeDA | 715.0 / 670.0 | 44413.47 | 250.00 |
| PFTeDA_1 | 713.0 / 669.0 | N/A | 13C2-PFTeDA | 715.0 / 670.0 | 44413.47 | 250.00 |
| PFTeDA_2 | 713.0 / 169.0 | N/A | 13C2-PFTeDA | 715.0 / 670.0 | 44413.47 | 250.00 |
| NMeFOSAA_1 | 570.0 / 419.0 | N/A | d3-MeFOSAA | 573.0 / 419.0 | 8032.84 | 250.00 |
| NMeFOSAA_2 | 570.0 / 512.0 | N/A | d3-MeFOSAA | 573.0 / 419.0 | 8032.84 | 250.00 |
| NEtFOSAA_1 | 584.0 / 419.0 | N/A | d5-EtFOSAA | 589.0 / 419.0 | 9621.79 | 250.00 |
| NEtFOSAA_2 | 584.0 / 483.0 | N/A | d5-EtFOSAA | 589.0 / 419.0 | 9621.79 | 250.00 |
| PFBA | 213.0 / 169.0 | 1.16 | 13C4-PFBA | 217.0 / 172.0 | 40832.10 | 250.00 |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:17:59 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY46 IB | **Injection Vial** | 9 |
| **Sample ID** | Instrument Blank | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:53:03 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.17 | 13C3-PFBA | 216.0 / 172.0 | 55663.08 | 250.00 |
| 13C2-PFDoA | 615.0 / 570.0 | 4.00 | 13C2-PFDA | 515.0 / 470.0 | 98444.02 | 250.00 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.55 | 13C4-PFOS | 503.0 / 99.0 | 30847.94 | 239.25 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.71 | 13C4-PFOS | 503.0 / 99.0 | 30847.94 | 239.25 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 13C2-PFOA | 415.0 / 370.0 | 86993.18 | 250.00 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 13C2-PFOA | 415.0 / 370.0 | 86993.18 | 250.00 |
| 13C8-PFOA | 421.0 / 376.0 | 2.66 | 13C2-PFOA | 415.0 / 370.0 | 86993.18 | 250.00 |
| 13C9-PFNA | 472.0 / 427.0 | 3.04 | 13C2-PFOA | 415.0 / 370.0 | 86993.18 | 250.00 |
| 13C6-PFDA | 519.0 / 474.0 | 3.40 | 13C2-PFDA | 515.0 / 470.0 | 98444.02 | 250.00 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.71 | 13C2-PFDA | 515.0 / 470.0 | 98444.02 | 250.00 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.47 | 13C2-PFDA | 515.0 / 470.0 | 98444.02 | 250.00 |
| 13C3-PFBS | 302.0 / 99.0 | 1.54 | 13C4-PFOS | 503.0 / 99.0 | 30847.94 | 239.25 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.27 | 13C4-PFOS | 503.0 / 99.0 | 30847.94 | 239.25 |
| 13C8-PFOS | 507.0 / 99.0 | 3.04 | 13C4-PFOS | 503.0 / 99.0 | 30847.94 | 239.25 |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:18:08 PM

| | | | |
|---|---|---|---|
| **Sample Name** | CR635PB-FS(3) | **Injection Vial** | 15 |
| **Sample ID** | Procedural Blank | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:09:11 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.16 | 13C3-PFBA | 216.0 / 172.0 | 63890.01 | 250.00 |
| 13C2-PFDoA | 615.0 / 570.0 | 4.01 | 13C2-PFDA | 515.0 / 470.0 | 106743.63 | 250.00 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.56 | 13C4-PFOS | 503.0 / 99.0 | 28851.79 | 239.25 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.72 | 13C4-PFOS | 503.0 / 99.0 | 28851.79 | 239.25 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 13C2-PFOA | 415.0 / 370.0 | 87794.17 | 250.00 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 13C2-PFOA | 415.0 / 370.0 | 87794.17 | 250.00 |
| 13C8-PFOA | 421.0 / 376.0 | 2.65 | 13C2-PFOA | 415.0 / 370.0 | 87794.17 | 250.00 |
| 13C9-PFNA | 472.0 / 427.0 | 3.04 | 13C2-PFOA | 415.0 / 370.0 | 87794.17 | 250.00 |
| 13C6-PFDA | 519.0 / 474.0 | 3.40 | 13C2-PFDA | 515.0 / 470.0 | 106743.63 | 250.00 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.71 | 13C2-PFDA | 515.0 / 470.0 | 106743.63 | 250.00 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.47 | 13C2-PFDA | 515.0 / 470.0 | 106743.63 | 250.00 |
| 13C3-PFBS | 302.0 / 99.0 | 1.53 | 13C4-PFOS | 503.0 / 99.0 | 28851.79 | 239.25 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.27 | 13C4-PFOS | 503.0 / 99.0 | 28851.79 | 239.25 |
| 13C8-PFOS | 507.0 / 99.0 | 3.04 | 13C4-PFOS | 503.0 / 99.0 | 28851.79 | 239.25 |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:18:18 PM

| | | | |
|---|---|---|---|
| **Sample Name** | CR636LCS-FS(3) | **Injection Vial** | 16 |
| **Sample ID** | Laboratory Control Sample | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:20:03 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.17 | 13C3-PFBA | 216.0 / 172.0 | 54125.02 | 250.00 |
| 13C2-PFDoA | 615.0 / 570.0 | 4.00 | 13C2-PFDA | 515.0 / 470.0 | 91207.27 | 250.00 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.55 | 13C4-PFOS | 503.0 / 99.0 | 24552.30 | 239.25 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.71 | 13C4-PFOS | 503.0 / 99.0 | 24552.30 | 239.25 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 13C2-PFOA | 415.0 / 370.0 | 76087.27 | 250.00 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 13C2-PFOA | 415.0 / 370.0 | 76087.27 | 250.00 |
| 13C8-PFOA | 421.0 / 376.0 | 2.66 | 13C2-PFOA | 415.0 / 370.0 | 76087.27 | 250.00 |
| 13C9-PFNA | 472.0 / 427.0 | 3.04 | 13C2-PFOA | 415.0 / 370.0 | 76087.27 | 250.00 |
| 13C6-PFDA | 519.0 / 474.0 | 3.39 | 13C2-PFDA | 515.0 / 470.0 | 91207.27 | 250.00 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.71 | 13C2-PFDA | 515.0 / 470.0 | 91207.27 | 250.00 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.47 | 13C2-PFDA | 515.0 / 470.0 | 91207.27 | 250.00 |
| 13C3-PFBS | 302.0 / 99.0 | 1.54 | 13C4-PFOS | 503.0 / 99.0 | 24552.30 | 239.25 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.27 | 13C4-PFOS | 503.0 / 99.0 | 24552.30 | 239.25 |
| 13C8-PFOS | 507.0 / 99.0 | 3.04 | 13C4-PFOS | 503.0 / 99.0 | 24552.30 | 239.25 |

BATTELLE

Summary Internal Standard Report

Created with Analyst Reporter
Printed: 29/08/2018 2:18:24 PM

| | | | |
|---|---|---|---|
| **Sample Name** | J7401-FS(3) | **Injection Vial** | 17 |
| **Sample ID** | NASB-BLL15-GW-FB01-080918 | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:30:55 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | IS | IS MRM Transition | IS Area | IS Conc. (ng/L) |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.16 | 13C3-PFBA | 216.0 / 172.0 | 47260.33 | 250.00 |
| 13C2-PFDoA | 615.0 / 570.0 | 3.99 | 13C2-PFDA | 515.0 / 470.0 | 84986.73 | 250.00 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.55 | 13C4-PFOS | 503.0 / 99.0 | 26359.53 | 239.25 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.71 | 13C4-PFOS | 503.0 / 99.0 | 26359.53 | 239.25 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.84 | 13C2-PFOA | 415.0 / 370.0 | 76320.12 | 250.00 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 13C2-PFOA | 415.0 / 370.0 | 76320.12 | 250.00 |
| 13C8-PFOA | 421.0 / 376.0 | 2.65 | 13C2-PFOA | 415.0 / 370.0 | 76320.12 | 250.00 |
| 13C9-PFNA | 472.0 / 427.0 | 3.04 | 13C2-PFOA | 415.0 / 370.0 | 76320.12 | 250.00 |
| 13C6-PFDA | 519.0 / 474.0 | 3.39 | 13C2-PFDA | 515.0 / 470.0 | 84986.73 | 250.00 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.71 | 13C2-PFDA | 515.0 / 470.0 | 84986.73 | 250.00 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.46 | 13C2-PFDA | 515.0 / 470.0 | 84986.73 | 250.00 |
| 13C3-PFBS | 302.0 / 99.0 | 1.53 | 13C4-PFOS | 503.0 / 99.0 | 26359.53 | 239.25 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.27 | 13C4-PFOS | 503.0 / 99.0 | 26359.53 | 239.25 |
| 13C8-PFOS | 507.0 / 99.0 | 3.03 | 13C4-PFOS | 503.0 / 99.0 | 26359.53 | 239.25 |

# Chromatograms

BATTELLE

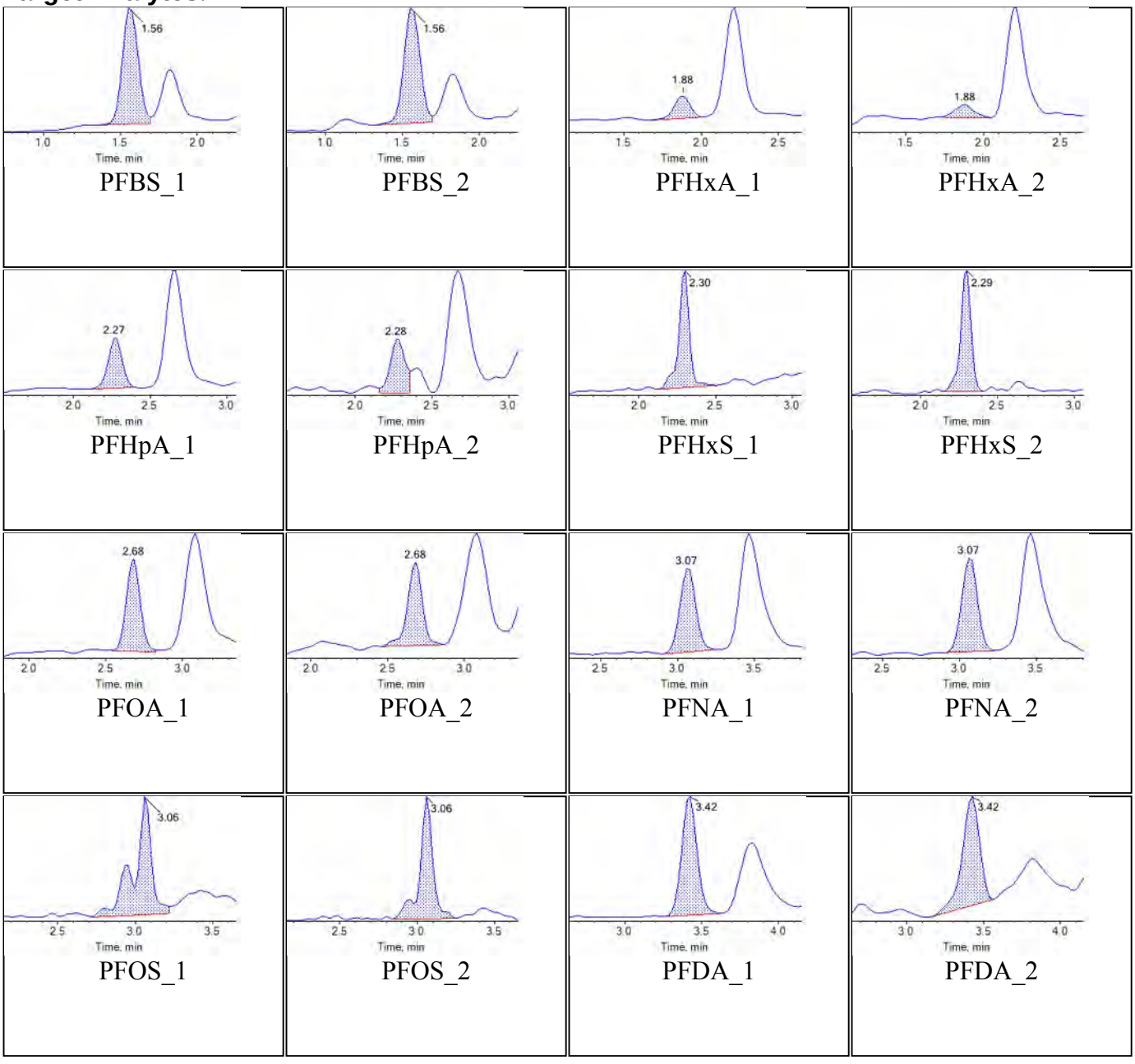
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:34:05 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY38 | **Injection Vial** | 2 |
| **Sample ID** | L1 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:36:54 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Chromatograms

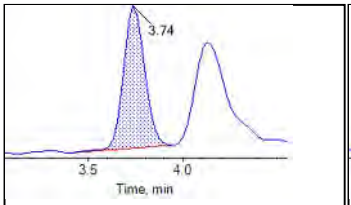
### Target Analytes:



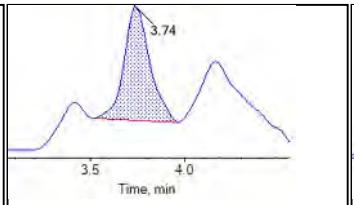
BATTELLE

Chromatogram Report

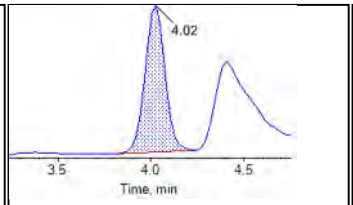
Created with Analyst Reporter
Printed: 29/08/2018 2:34:05 PM



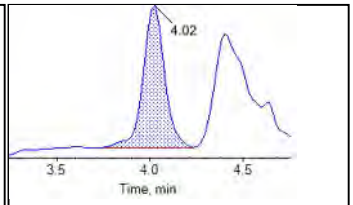
PFUnA_1



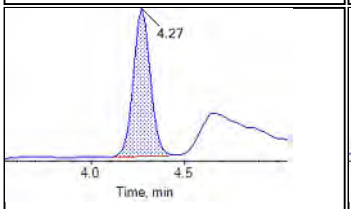
PFUnA_2



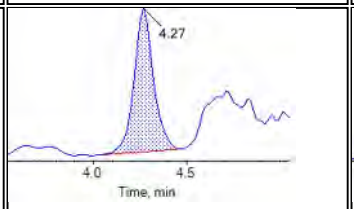
PFDoA_1



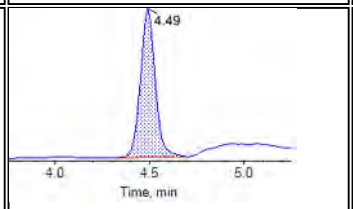
PFDoA_2



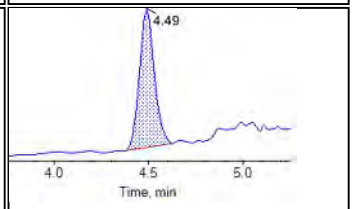
PFTrDA_1



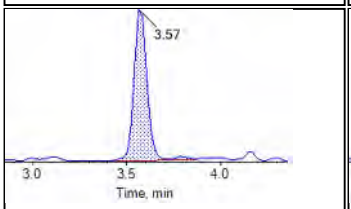
PFTrDA_2



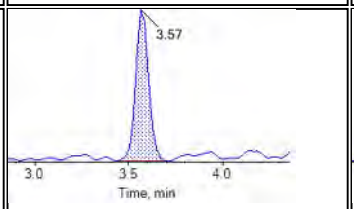
PFTeDA_1



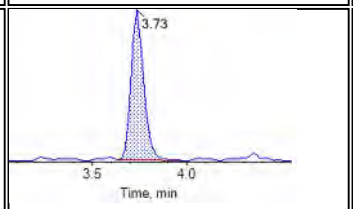
PFTeDA_2



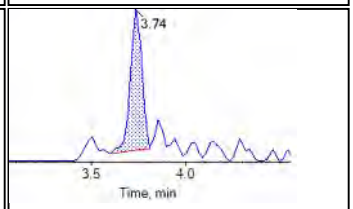
NMeFOSAA_1



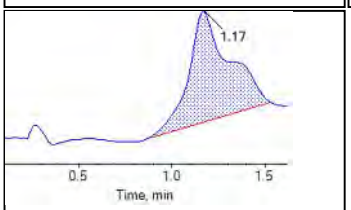
NMeFOSAA_2



NEtFOSAA_1



NEtFOSAA_2



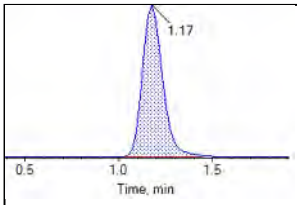
PFBA

**Internal Standards:**

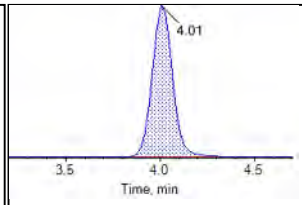
BATTELLE

Chromatogram Report

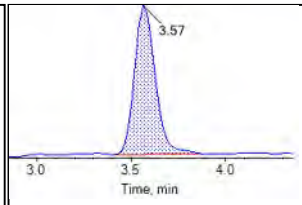
Created with Analyst Reporter
Printed: 29/08/2018 2:34:05 PM



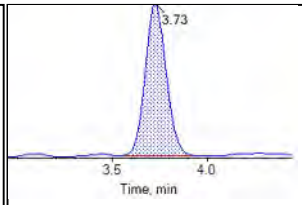

13C4-PFBA



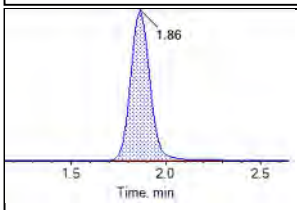

13C2-PFDoA



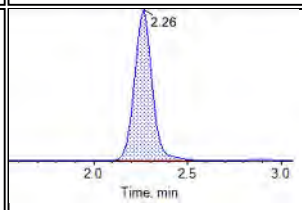

d3-MeFOSAA



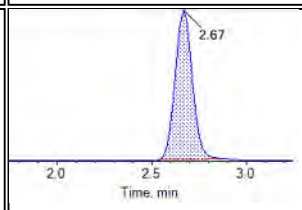

d5-EtFOSAA



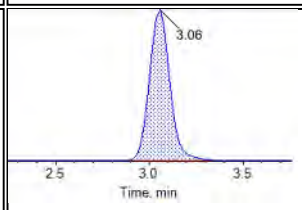

13C5-PFHxA



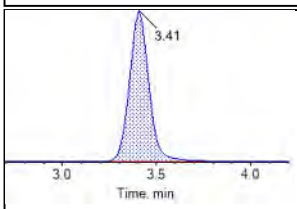

13C4-PFHpA



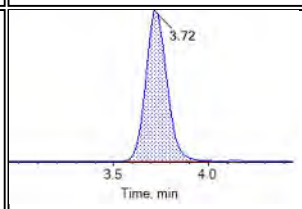

13C8-PFOA



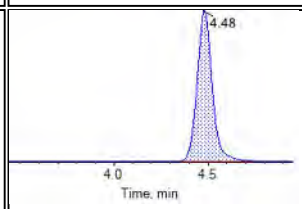

13C9-PFNA



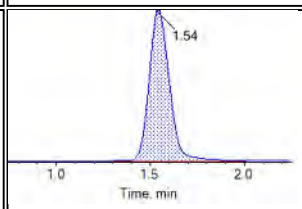

13C6-PFDA



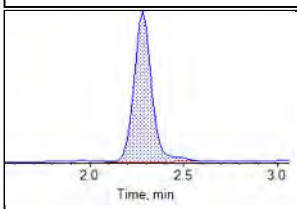

13C7-PFUnA



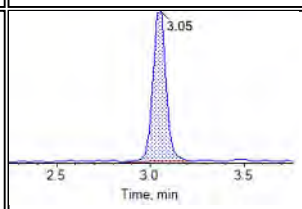

13C2-PFTeDA




13C3-PFBS




13C3-PFHxS




13C8-PFOS

BATTELLE

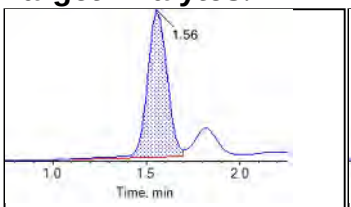
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:34:11 PM

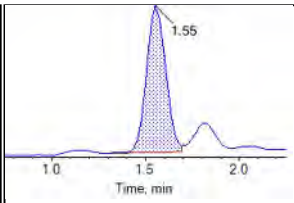
| | | | |
|---|---|---|---|
| **Sample Name** | JY39 | **Injection Vial** | 3 |
| **Sample ID** | L2 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:47:47 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Chromatograms

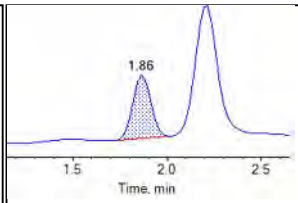
### Target Analytes:



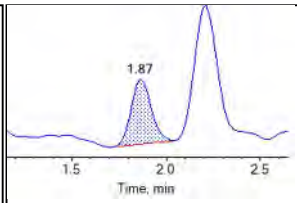
PFBS_1



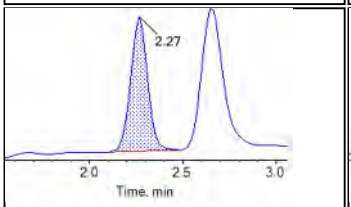
PFBS_2



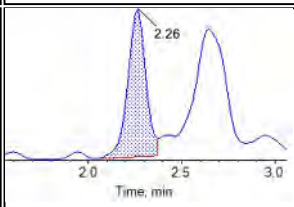
PFHxA_1



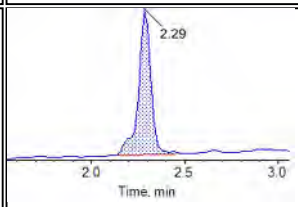
PFHxA_2



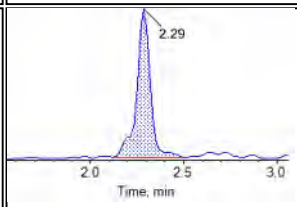
PFHpA_1



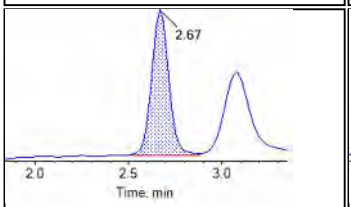
PFHpA_2



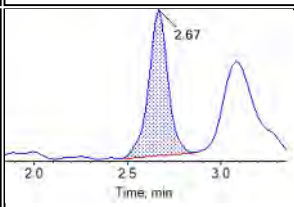
PFHxS_1



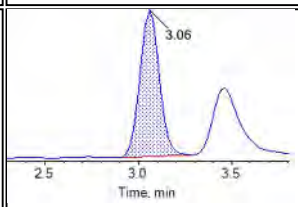
PFHxS_2



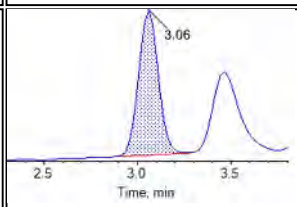
PFOA_1



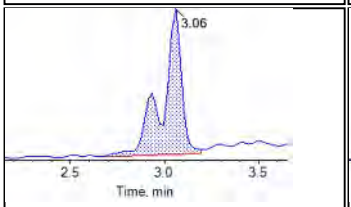
PFOA_2



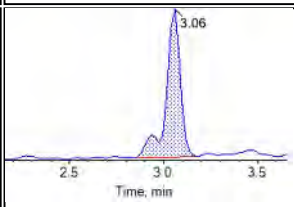
PFNA_1



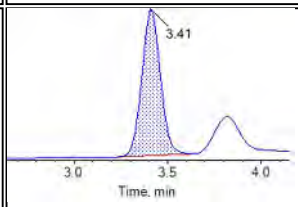
PFNA_2



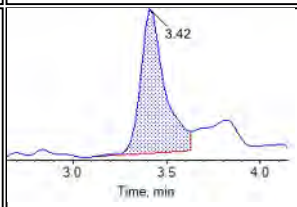
PFOS_1



PFOS_2



PFDA_1

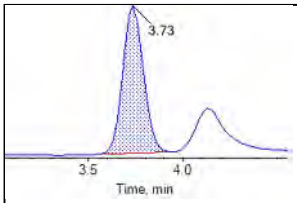


PFDA_2

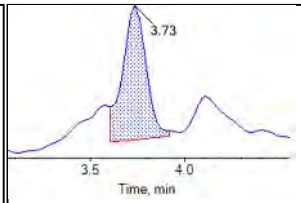
BATTELLE

Chromatogram Report

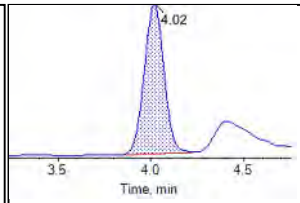
Created with Analyst Reporter
Printed: 29/08/2018 2:34:11 PM



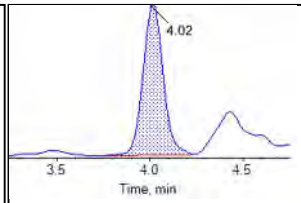

PFUnA_1



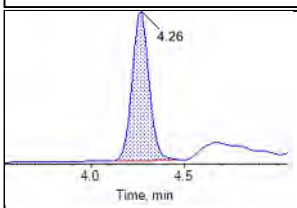

PFUnA_2



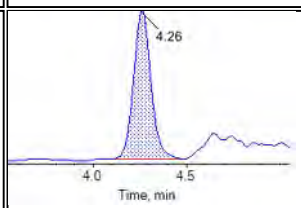

PFDoA_1



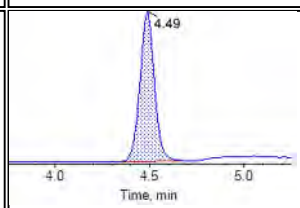

PFDoA_2



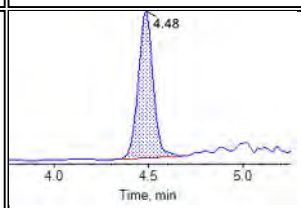

PFTrDA_1



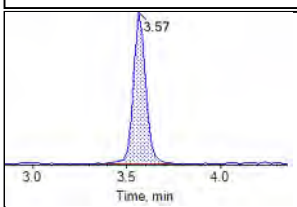

PFTrDA_2



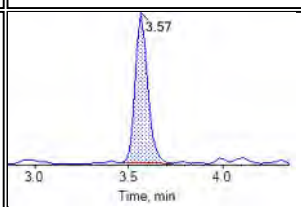

PFTeDA_1



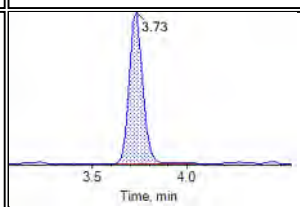

PFTeDA_2



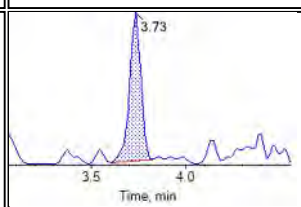

NMeFOSAA_1



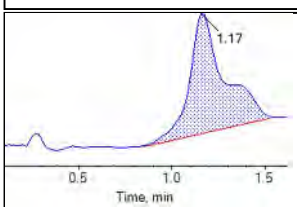

NMeFOSAA_2




NEtFOSAA_1




NEtFOSAA_2



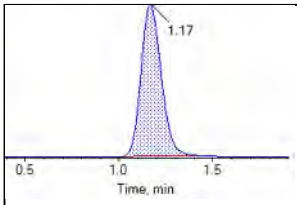

PFBA

**Internal Standards:**

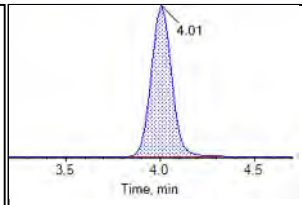
BATTELLE

Chromatogram Report

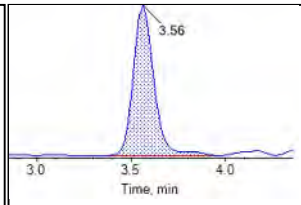
Created with Analyst Reporter
Printed: 29/08/2018 2:34:11 PM



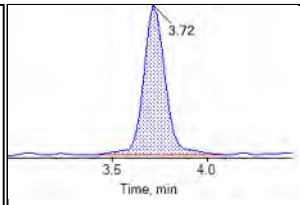

13C4-PFBA



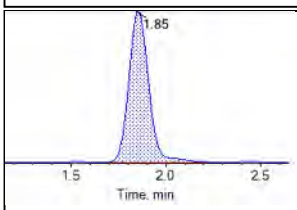

13C2-PFDoA



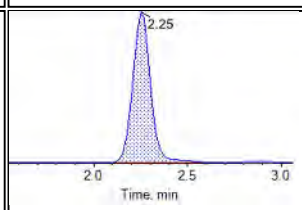

d3-MeFOSAA



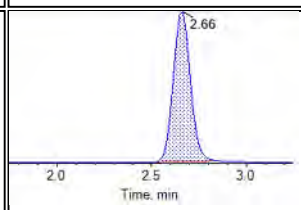

d5-EtFOSAA



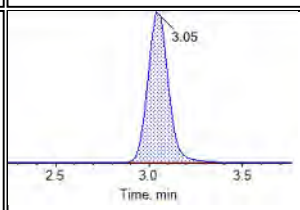

13C5-PFHxA



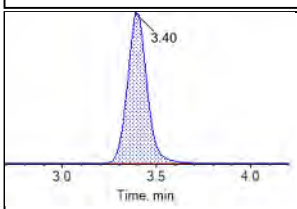

13C4-PFHpA



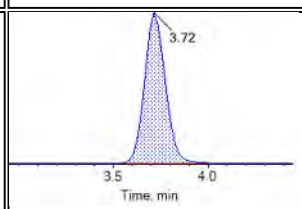

13C8-PFOA



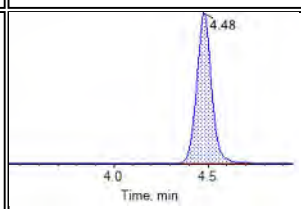

13C9-PFNA



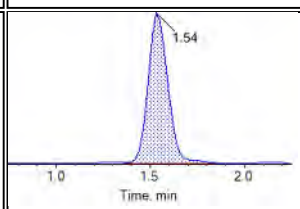

13C6-PFDA



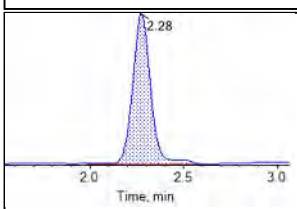

13C7-PFUnA



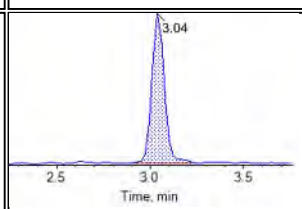

13C2-PFTeDA




13C3-PFBS




13C3-PFHxS




13C8-PFOS

BATTELLE

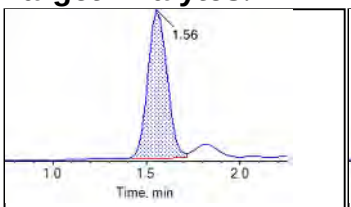
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:34:23 PM

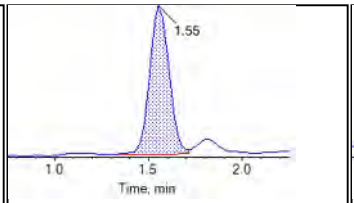
| | | | |
|---|---|---|---|
| **Sample Name** | JY40 | **Injection Vial** | 4 |
| **Sample ID** | L3 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:58:41 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Chromatograms

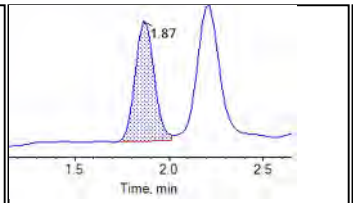
### Target Analytes:



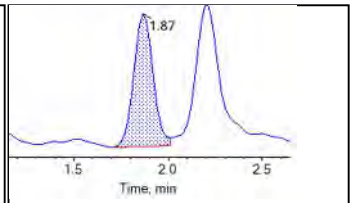
PFBS_1



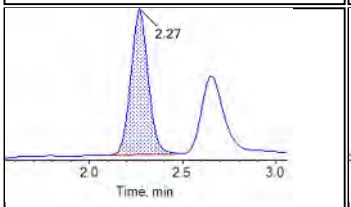
PFBS_2



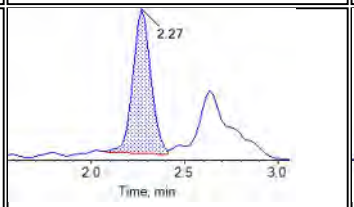
PFHxA_1



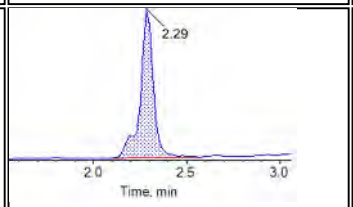
PFHxA_2



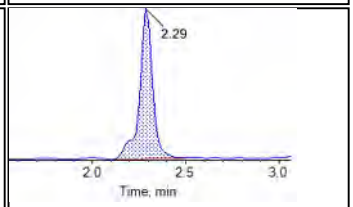
PFHpA_1



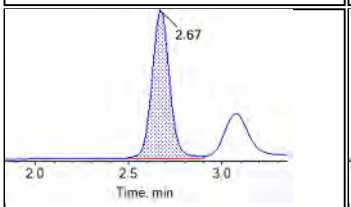
PFHpA_2



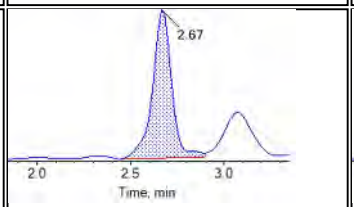
PFHxS_1



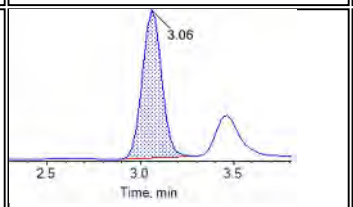
PFHxS_2



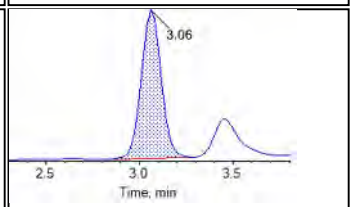
PFOA_1



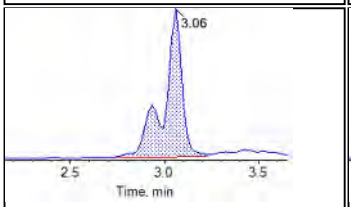
PFOA_2



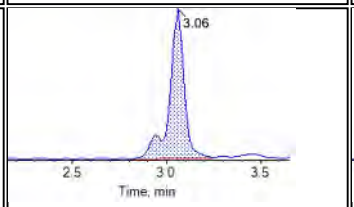
PFNA_1



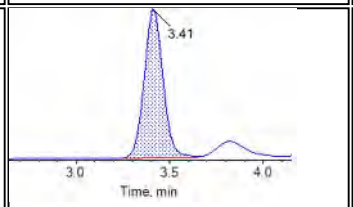
PFNA_2



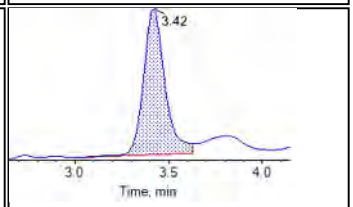
PFOS_1



PFOS_2



PFDA_1

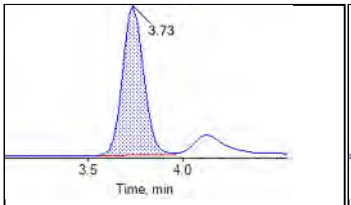


PFDA_2

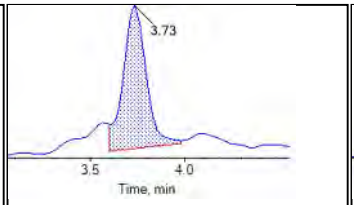
BATTELLE

Chromatogram Report

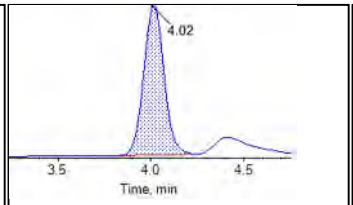
Created with Analyst Reporter
Printed: 29/08/2018 2:34:23 PM



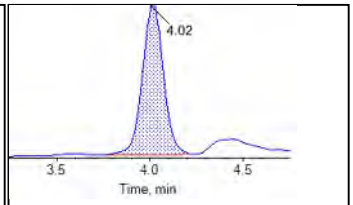
PFUnA_1



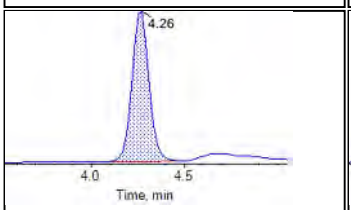
PFUnA_2



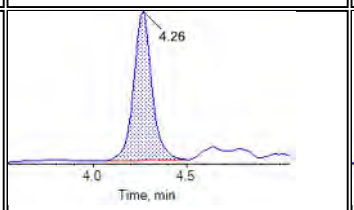
PFDoA_1



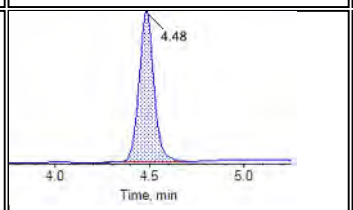
PFDoA_2



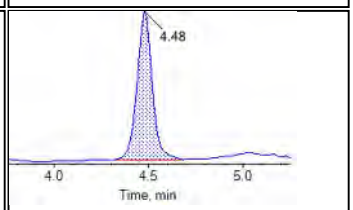
PFTrDA_1



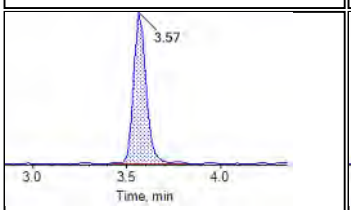
PFTrDA_2



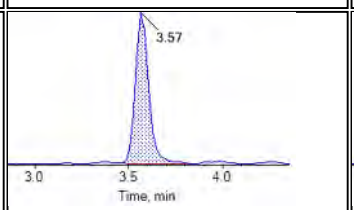
PFTeDA_1



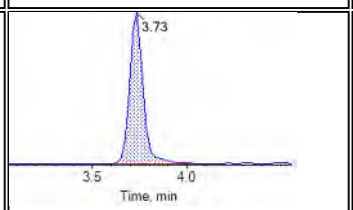
PFTeDA_2



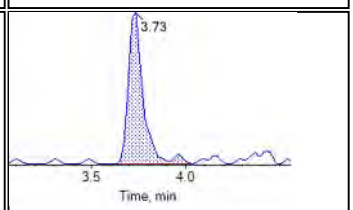
NMeFOSAA_1



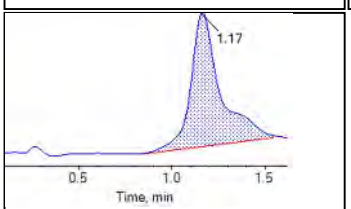
NMeFOSAA_2



NEtFOSAA_1



NEtFOSAA_2



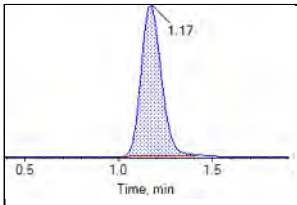
PFBA

**Internal Standards:**

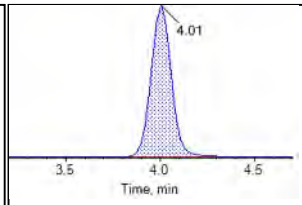
BATTELLE

Chromatogram Report

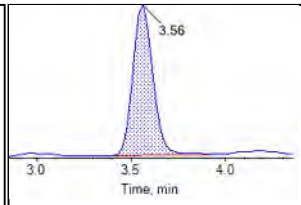
Created with Analyst Reporter
Printed: 29/08/2018 2:34:23 PM



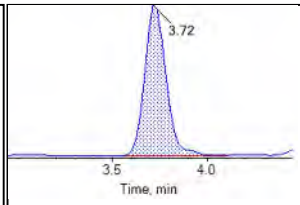

13C4-PFBA



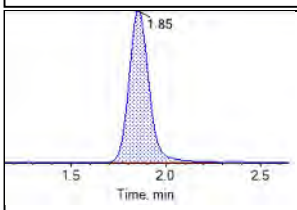

13C2-PFDoA



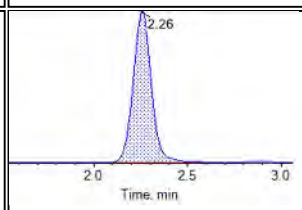

d3-MeFOSAA



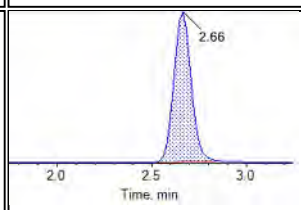

d5-EtFOSAA



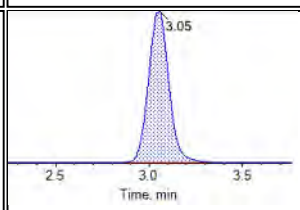

13C5-PFHxA



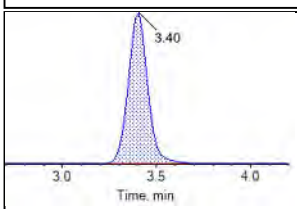

13C4-PFHpA



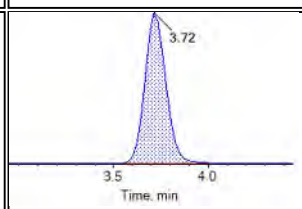

13C8-PFOA



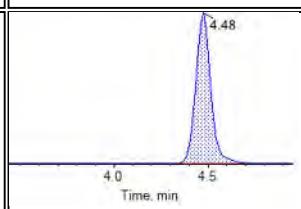

13C9-PFNA



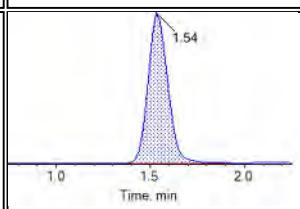

13C6-PFDA



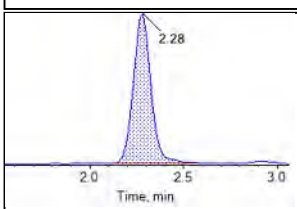

13C7-PFUnA



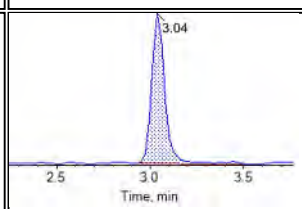

13C2-PFTeDA




13C3-PFBS




13C3-PFHxS




13C8-PFOS

BATTELLE

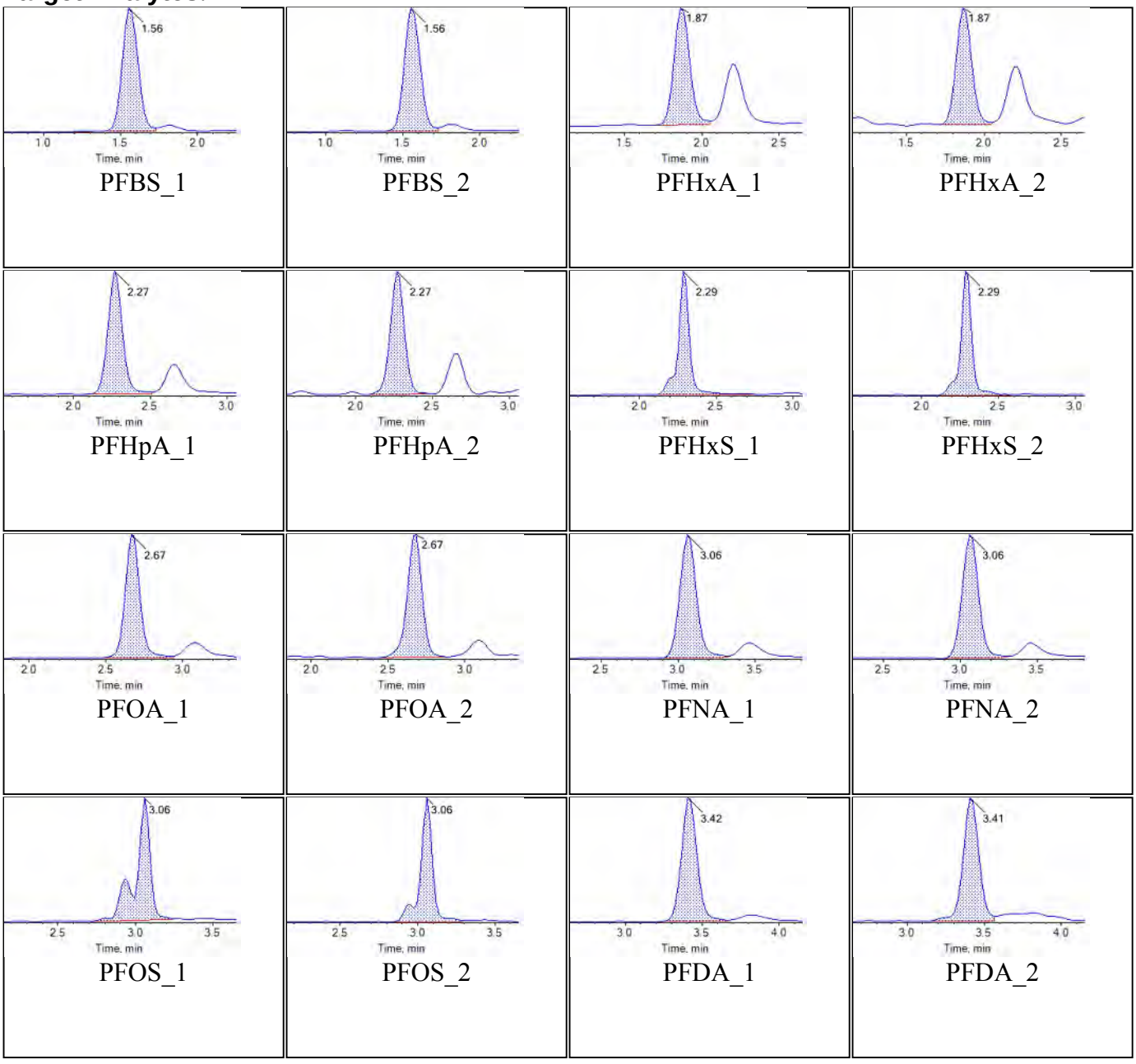
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:34:29 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY41 | **Injection Vial** | 5 |
| **Sample ID** | L4 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:09:34 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Chromatograms

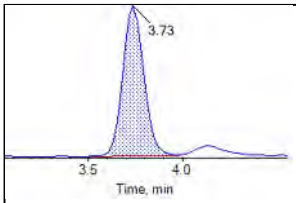
### Target Analytes:



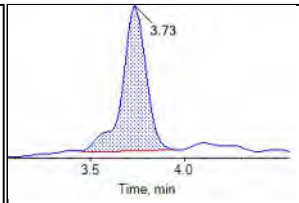
BATTELLE

Chromatogram Report

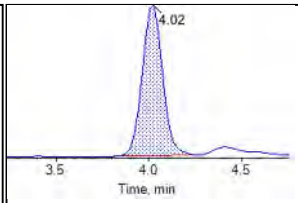
Created with Analyst Reporter
Printed: 29/08/2018 2:34:29 PM



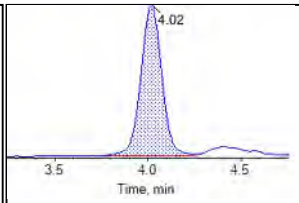
PFUnA_1



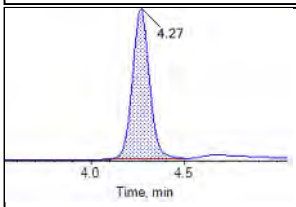
PFUnA_2



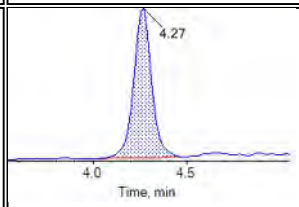
PFDoA_1



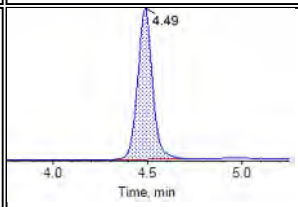
PFDoA_2



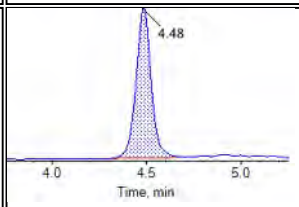
PFTrDA_1



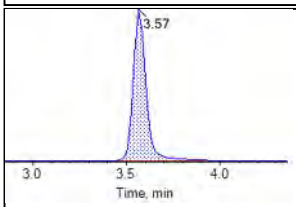
PFTrDA_2



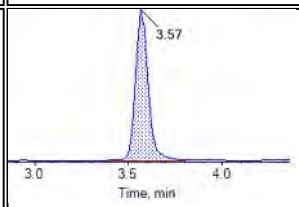
PFTeDA_1



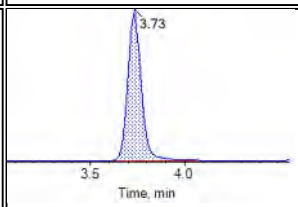
PFTeDA_2



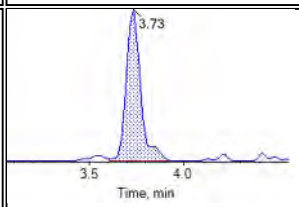
NMeFOSAA_1



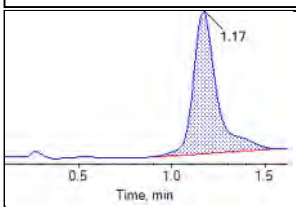
NMeFOSAA_2



NEtFOSAA_1



NEtFOSAA_2



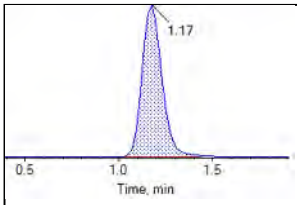
PFBA

**Internal Standards:**

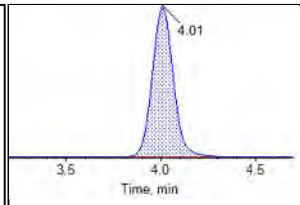
BATTELLE

Chromatogram Report

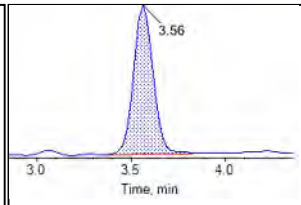
Created with Analyst Reporter
Printed: 29/08/2018 2:34:29 PM



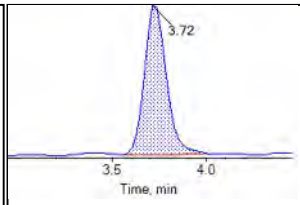

13C4-PFBA



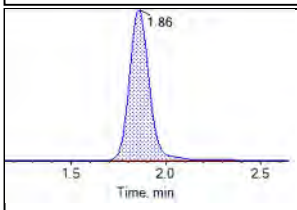

13C2-PFDoA



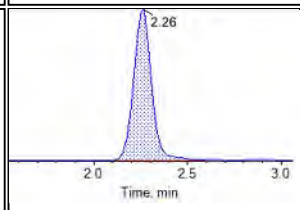

d3-MeFOSAA



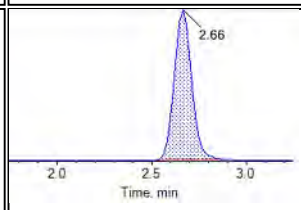

d5-EtFOSAA



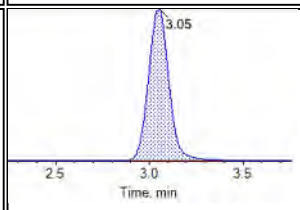

13C5-PFHxA



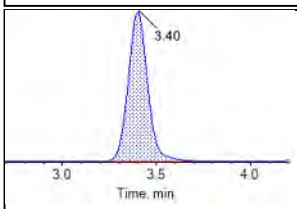

13C4-PFHpA



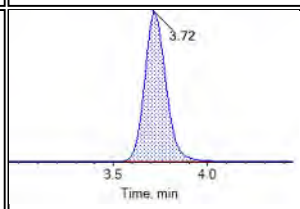

13C8-PFOA



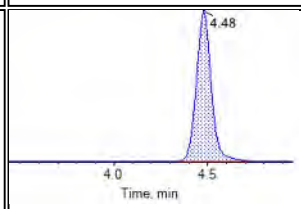

13C9-PFNA



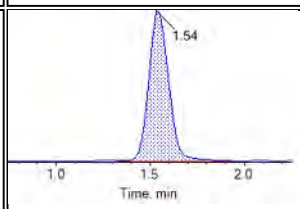

13C6-PFDA



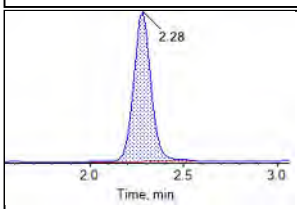

13C7-PFUnA



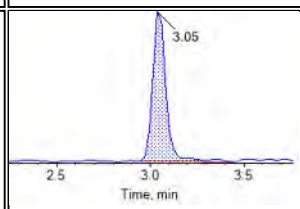

13C2-PFTeDA




13C3-PFBS




13C3-PFHxS




13C8-PFOS

BATTELLE

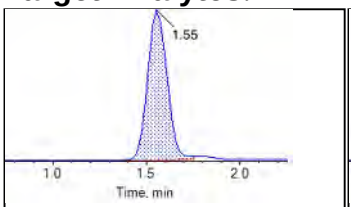
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:34:35 PM

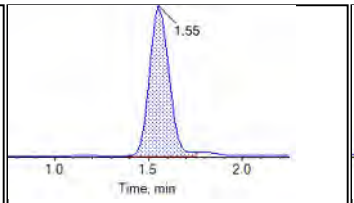
| | | | |
|---|---|---|---|
| **Sample Name** | JY42 | **Injection Vial** | 6 |
| **Sample ID** | L5 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:20:26 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Chromatograms

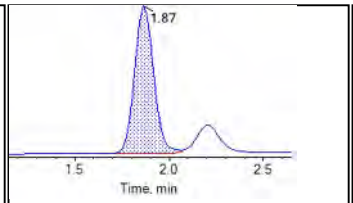
### Target Analytes:



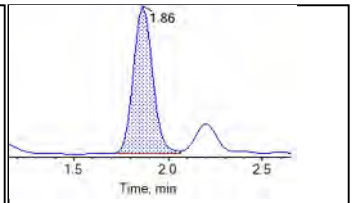
PFBS_1



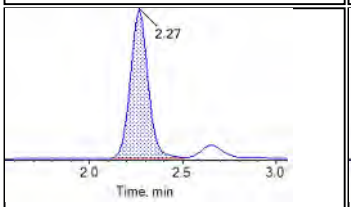
PFBS_2



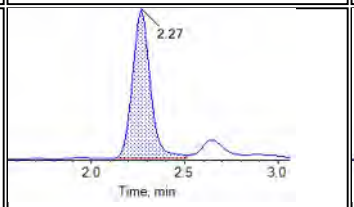
PFHxA_1



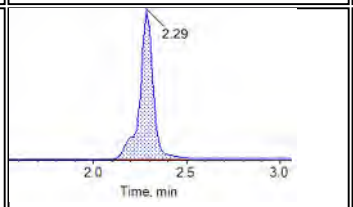
PFHxA_2



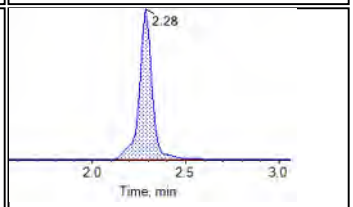
PFHpA_1



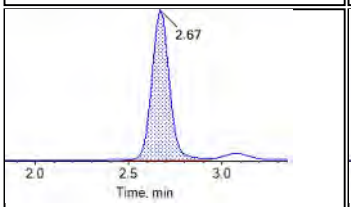
PFHpA_2



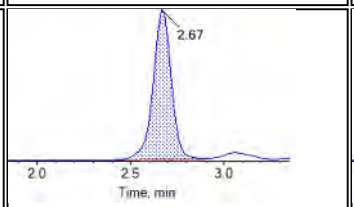
PFHxS_1



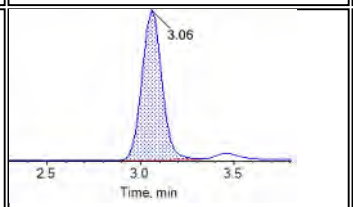
PFHxS_2



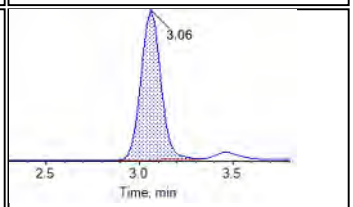
PFOA_1



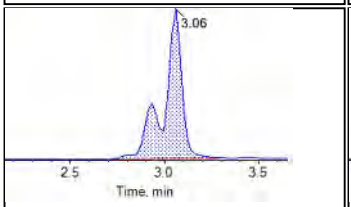
PFOA_2



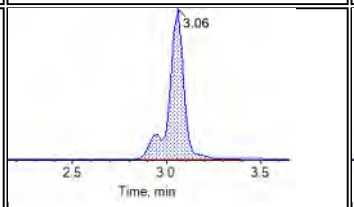
PFNA_1



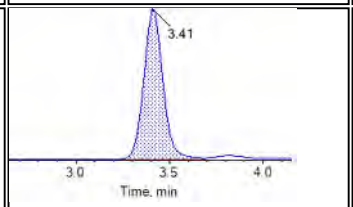
PFNA_2



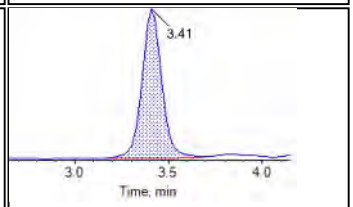
PFOS_1



PFOS_2



PFDA_1

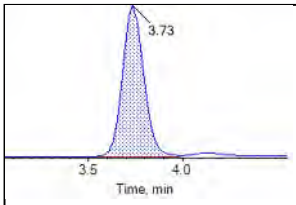


PFDA_2

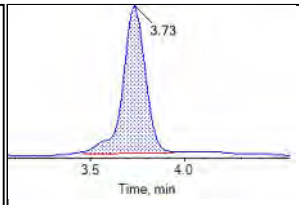
BATTELLE

Chromatogram Report

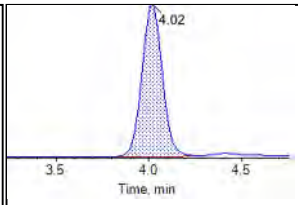
Created with Analyst Reporter
Printed: 29/08/2018 2:34:35 PM



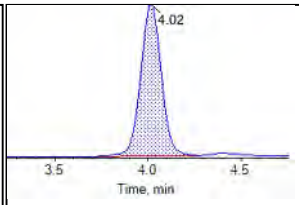
PFUnA_1



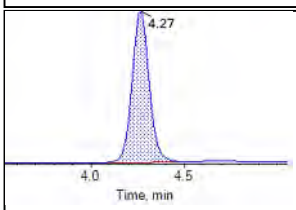
PFUnA_2



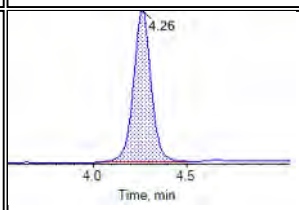
PFDoA_1



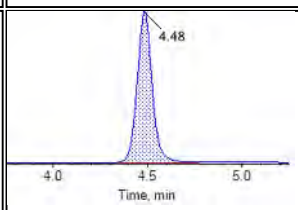
PFDoA_2



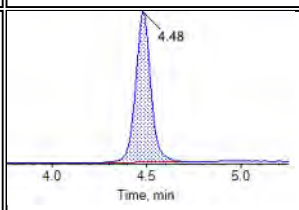
PFTrDA_1



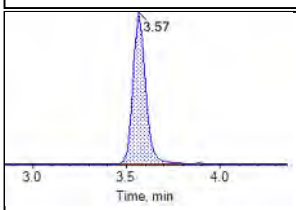
PFTrDA_2



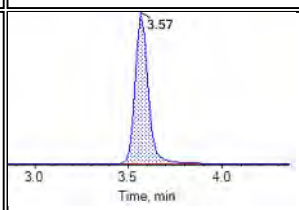
PFTeDA_1



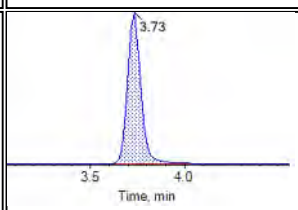
PFTeDA_2



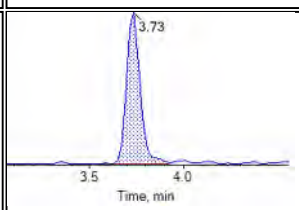
NMeFOSAA_1



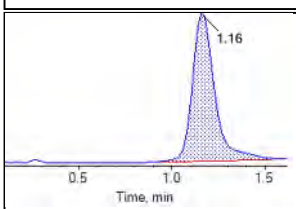
NMeFOSAA_2



NEtFOSAA_1



NEtFOSAA_2



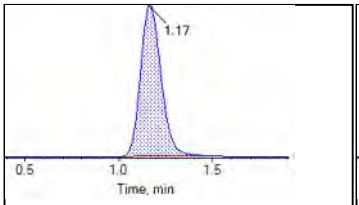
PFBA

**Internal Standards:**

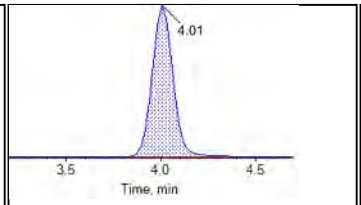
BATTELLE

Chromatogram Report

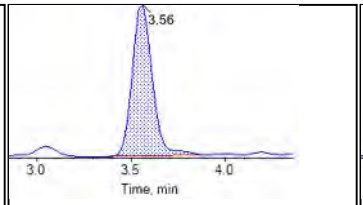
Created with Analyst Reporter
Printed: 29/08/2018 2:34:35 PM



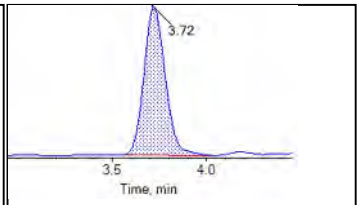

13C4-PFBA



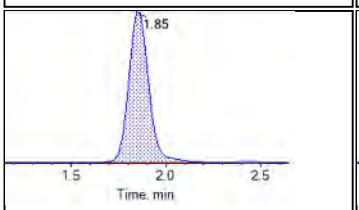

13C2-PFDoA



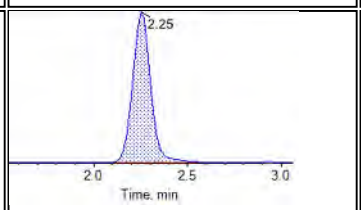

d3-MeFOSAA



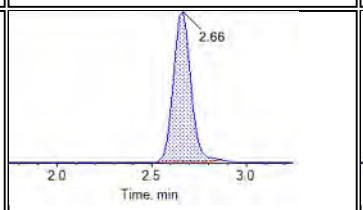

d5-EtFOSAA



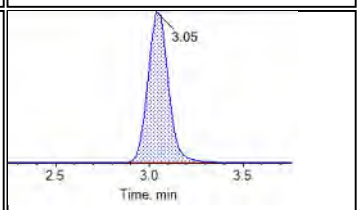

13C5-PFHxA



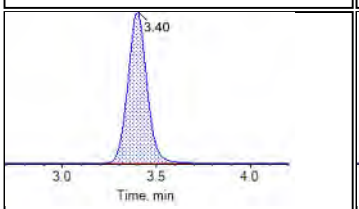

13C4-PFHpA



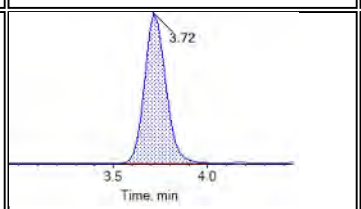

13C8-PFOA



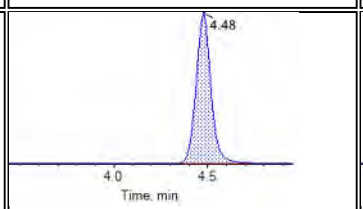

13C9-PFNA



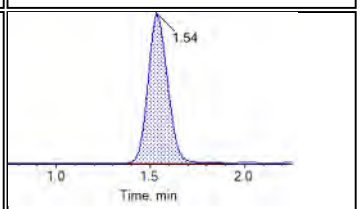

13C6-PFDA



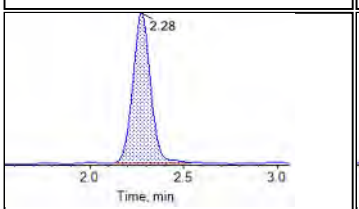

13C7-PFUnA



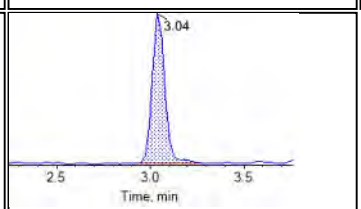

13C2-PFTeDA




13C3-PFBS




13C3-PFHxS




13C8-PFOS

BATTELLE

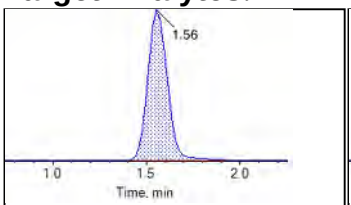
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:34:42 PM

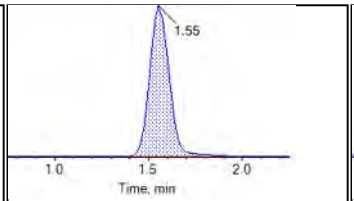
| | | | |
|---|---|---|---|
| **Sample Name** | JY43 | **Injection Vial** | 7 |
| **Sample ID** | L6 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:31:18 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Chromatograms

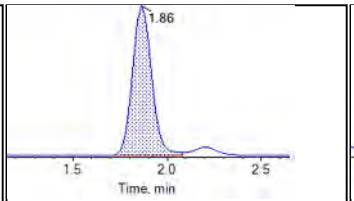
### Target Analytes:



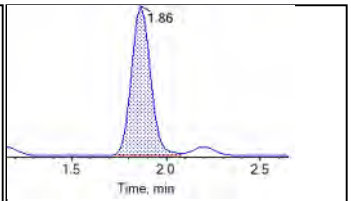
PFBS_1



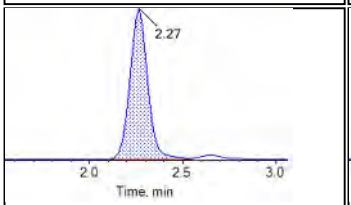
PFBS_2



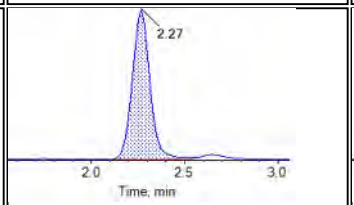
PFHxA_1



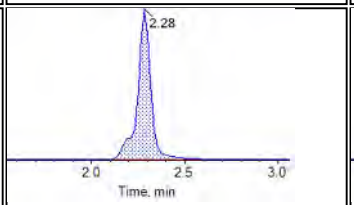
PFHxA_2



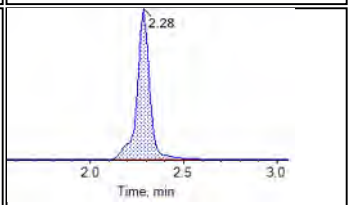
PFHpA_1



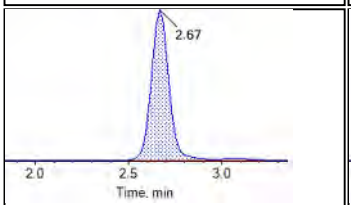
PFHpA_2



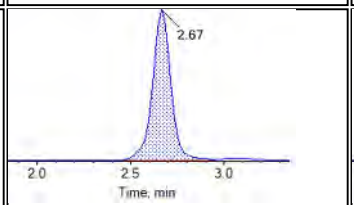
PFHxS_1



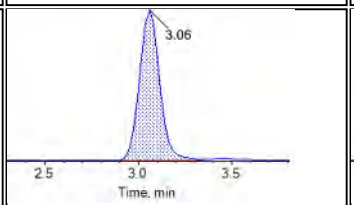
PFHxS_2



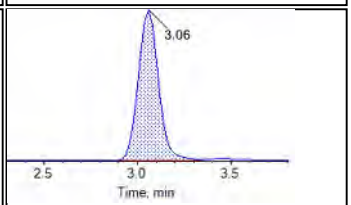
PFOA_1



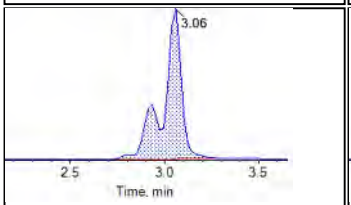
PFOA_2



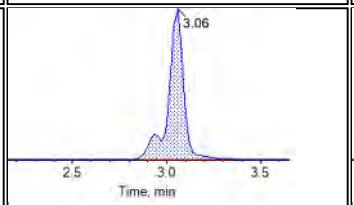
PFNA_1



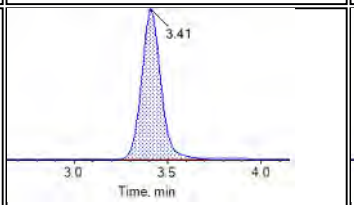
PFNA_2



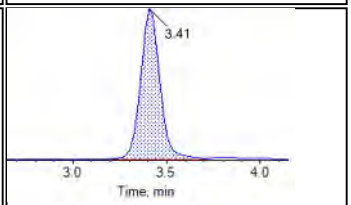
PFOS_1



PFOS_2



PFDA_1

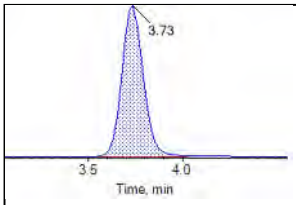


PFDA_2

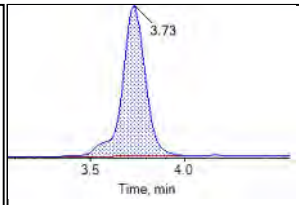
BATTELLE

Chromatogram Report

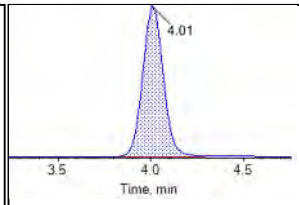
Created with Analyst Reporter
Printed: 29/08/2018 2:34:42 PM



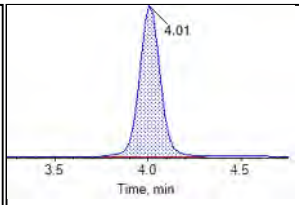
PFUnA_1



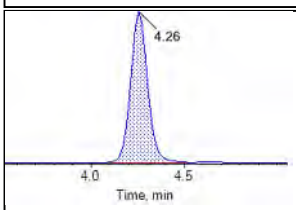
PFUnA_2



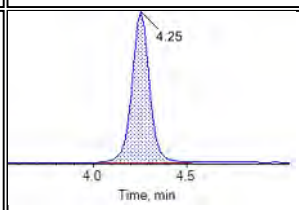
PFDoA_1



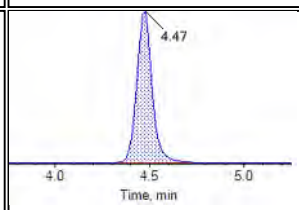
PFDoA_2



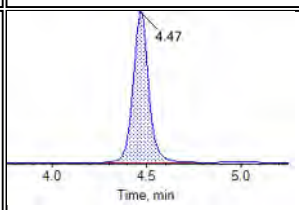
PFTrDA_1



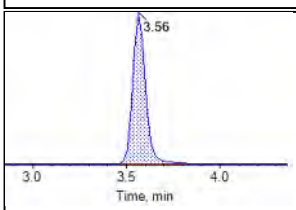
PFTrDA_2



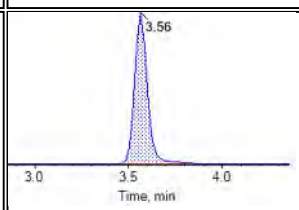
PFTeDA_1



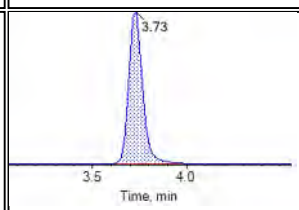
PFTeDA_2



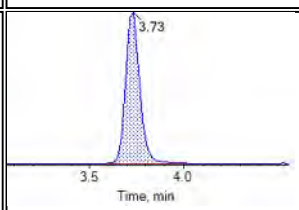
NMeFOSAA_1



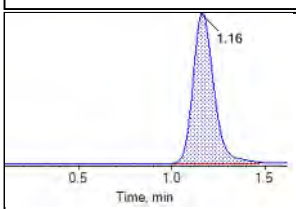
NMeFOSAA_2



NEtFOSAA_1



NEtFOSAA_2



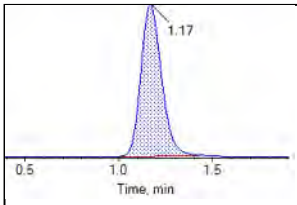
PFBA

**Internal Standards:**

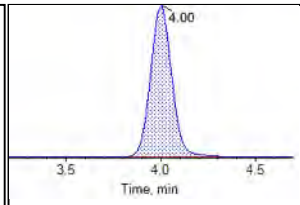
BATTELLE

Chromatogram Report

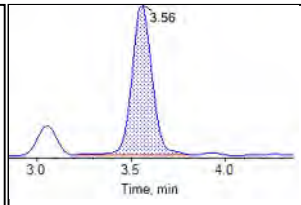
Created with Analyst Reporter
Printed: 29/08/2018 2:34:42 PM



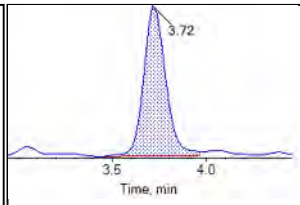

13C4-PFBA



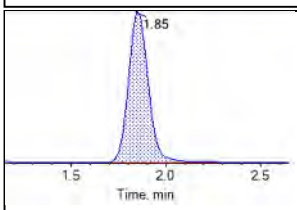

13C2-PFDoA



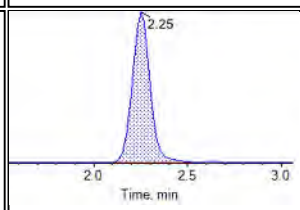

d3-MeFOSAA



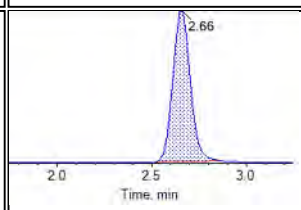

d5-EtFOSAA



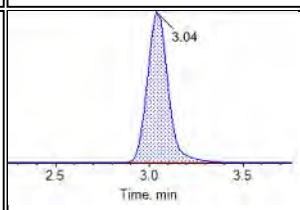

13C5-PFHxA



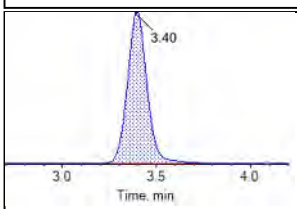

13C4-PFHpA



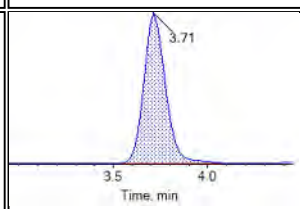

13C8-PFOA



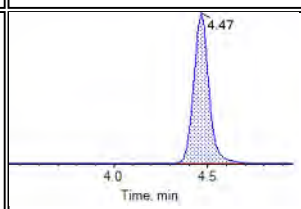

13C9-PFNA



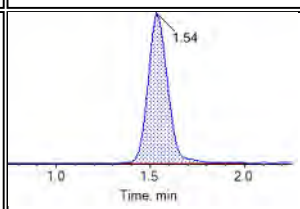

13C6-PFDA



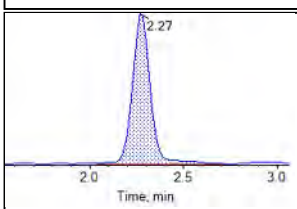

13C7-PFUnA



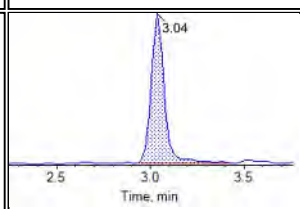

13C2-PFTeDA




13C3-PFBS




13C3-PFHxS




13C8-PFOS

BATTELLE

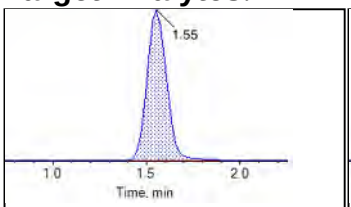
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:34:49 PM

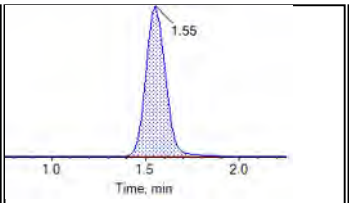
| | | | |
|---|---|---|---|
| **Sample Name** | JY44 | **Injection Vial** | 8 |
| **Sample ID** | L7 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:42:11 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Chromatograms

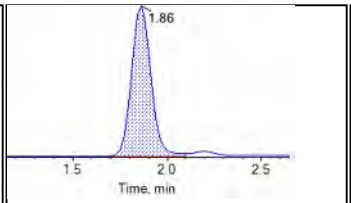
### Target Analytes:



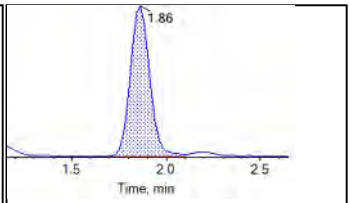
PFBS_1



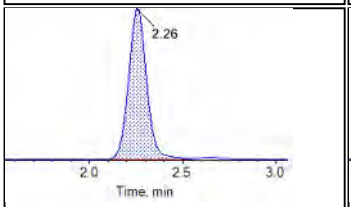
PFBS_2



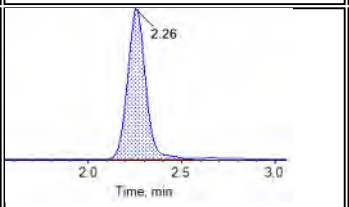
PFHxA_1



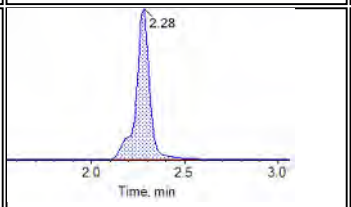
PFHxA_2



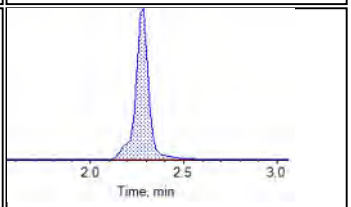
PFHpA_1



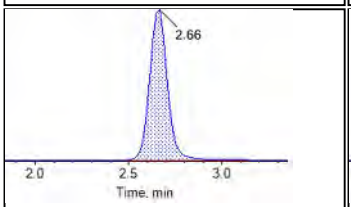
PFHpA_2



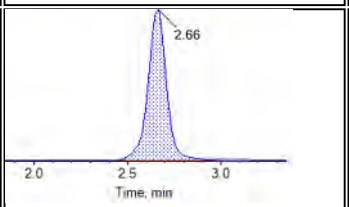
PFHxS_1



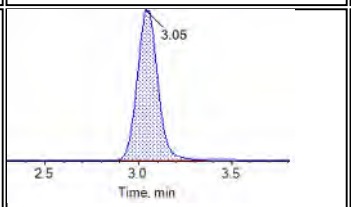
PFHxS_2



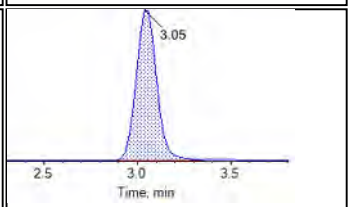
PFOA_1



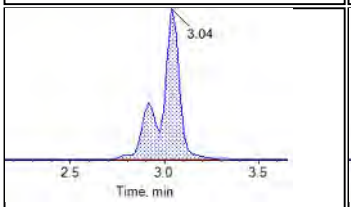
PFOA_2



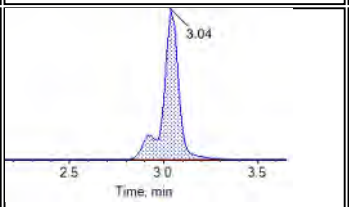
PFNA_1



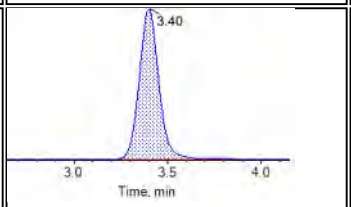
PFNA_2



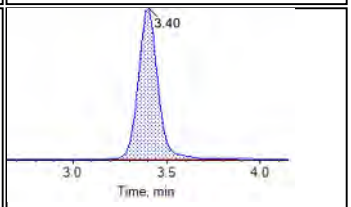
PFOS_1



PFOS_2



PFDA_1

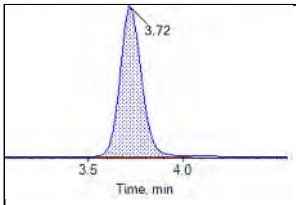


PFDA_2

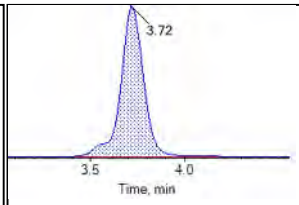
BATTELLE

Chromatogram Report

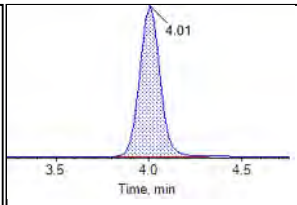
Created with Analyst Reporter
Printed: 29/08/2018 2:34:49 PM



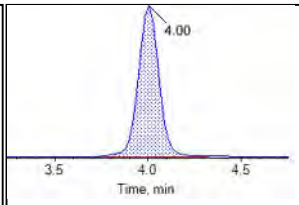
PFUnA_1



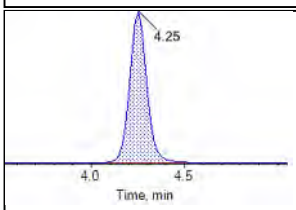
PFUnA_2



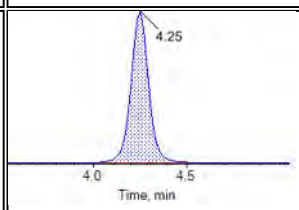
PFDoA_1



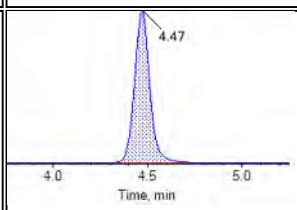
PFDoA_2



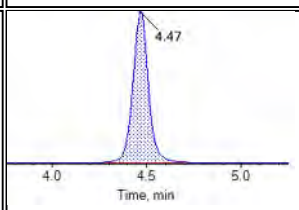
PFTrDA_1



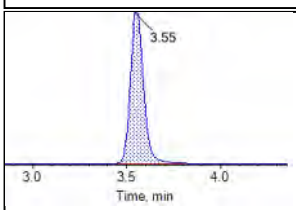
PFTrDA_2



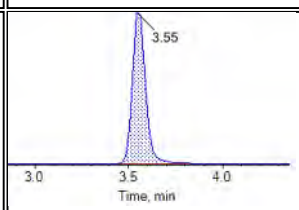
PFTeDA_1



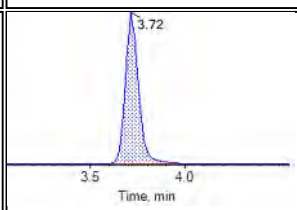
PFTeDA_2



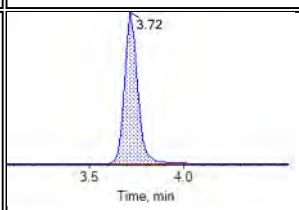
NMeFOSAA_1



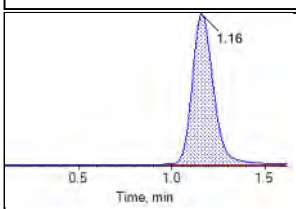
NMeFOSAA_2



NEtFOSAA_1



NEtFOSAA_2



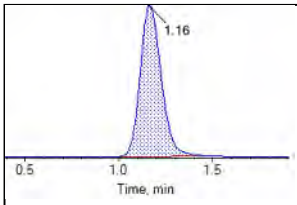
PFBA

**Internal Standards:**

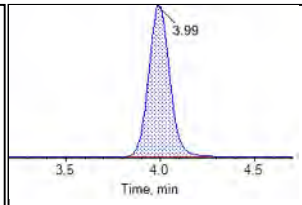
BATTELLE

Chromatogram Report

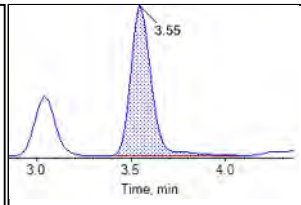
Created with Analyst Reporter
Printed: 29/08/2018 2:34:49 PM



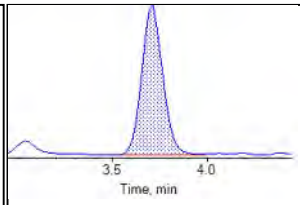

13C4-PFBA



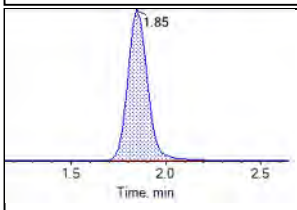

13C2-PFDoA



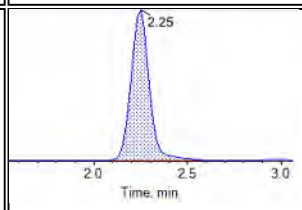

d3-MeFOSAA



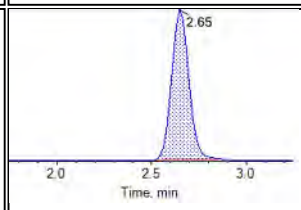

d5-EtFOSAA



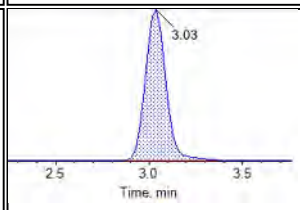

13C5-PFHxA



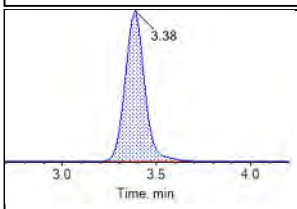

13C4-PFHpA



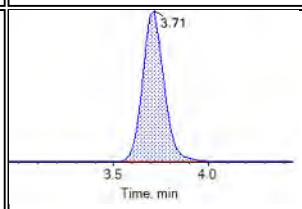

13C8-PFOA



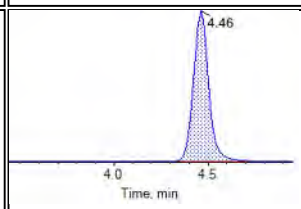

13C9-PFNA



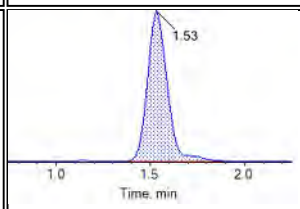

13C6-PFDA



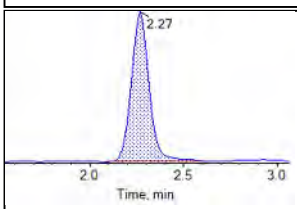

13C7-PFUnA



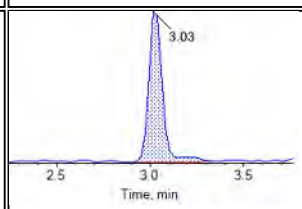

13C2-PFTeDA




13C3-PFBS




13C3-PFHxS




13C8-PFOS

BATTELLE

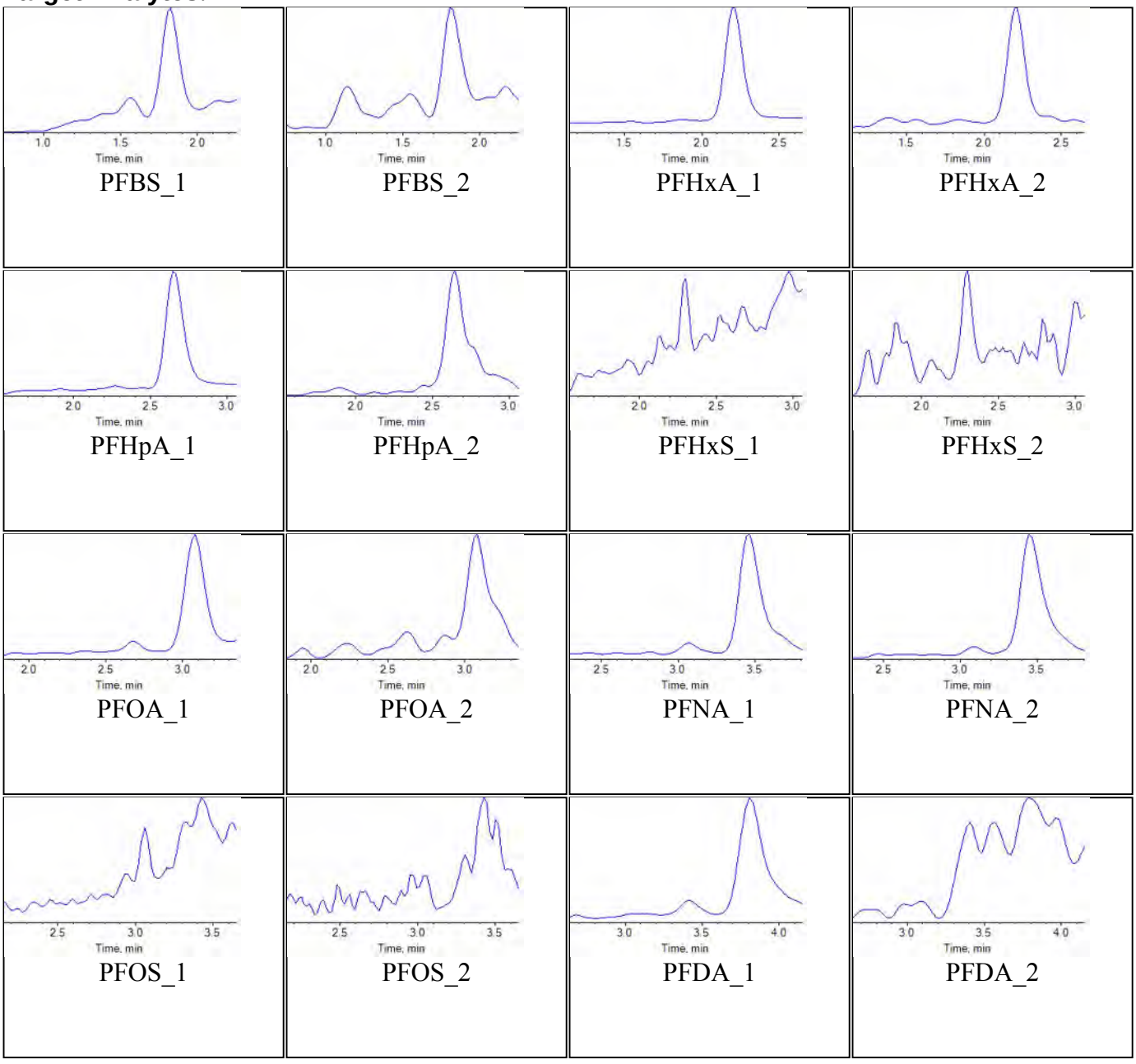
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:34:56 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY46 IB | **Injection Vial** | 9 |
| **Sample ID** | Instrument Blank | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:53:03 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Chromatograms

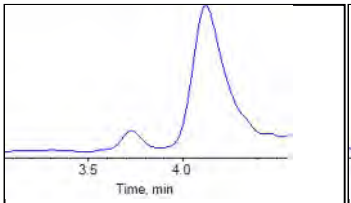
### Target Analytes:



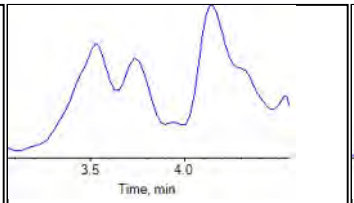
BATTELLE

Chromatogram Report

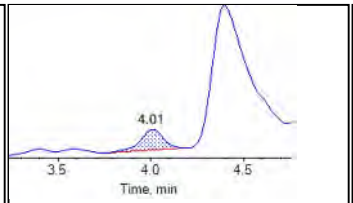
Created with Analyst Reporter
Printed: 29/08/2018 2:34:56 PM



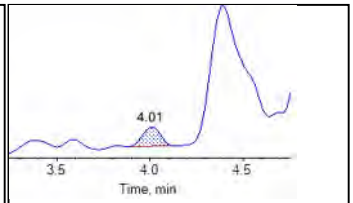
PFUnA_1



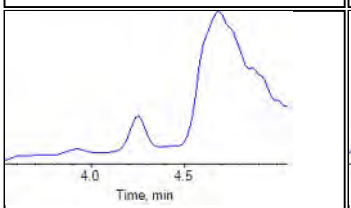
PFUnA_2



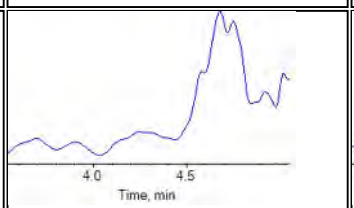
PFDoA_1



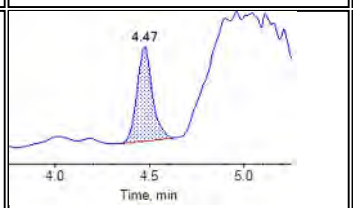
PFDoA_2



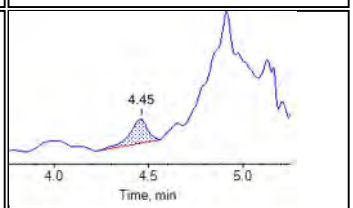
PFTrDA_1



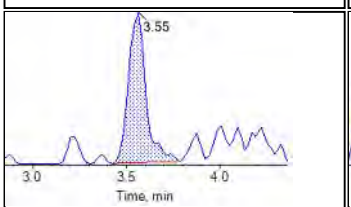
PFTrDA_2



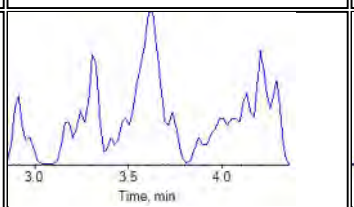
PFTeDA_1



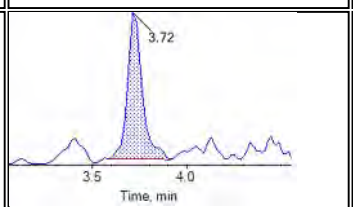
PFTeDA_2



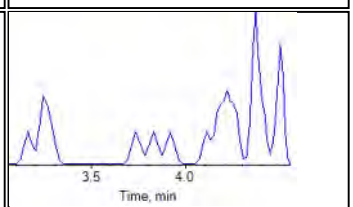
NMeFOSAA_1



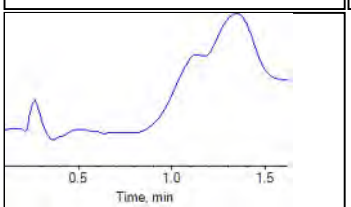
NMeFOSAA_2



NEtFOSAA_1



NEtFOSAA_2



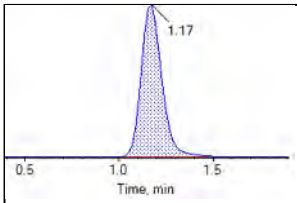
PFBA

**Internal Standards:**

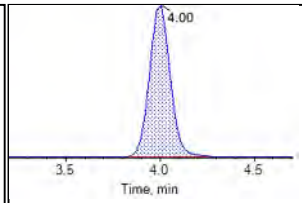
BATTELLE

Chromatogram Report

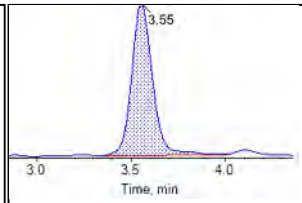
Created with Analyst Reporter
Printed: 29/08/2018 2:34:56 PM



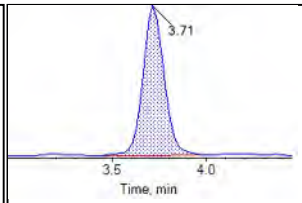

13C4-PFBA



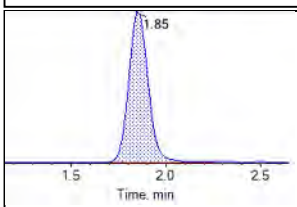

13C2-PFDoA



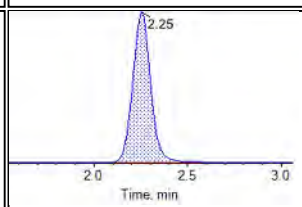

d3-MeFOSAA



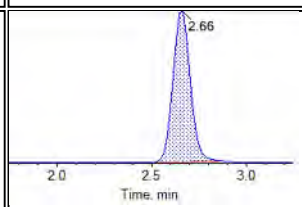

d5-EtFOSAA



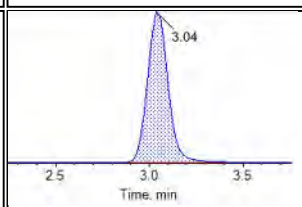

13C5-PFHxA



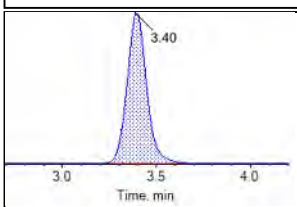

13C4-PFHpA



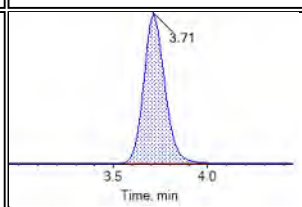

13C8-PFOA



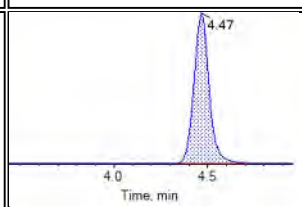

13C9-PFNA



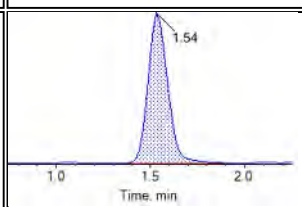

13C6-PFDA



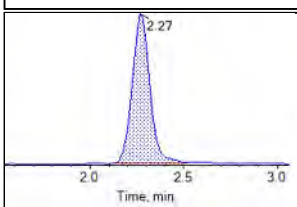

13C7-PFUnA



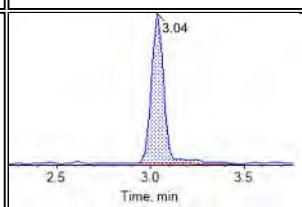

13C2-PFTeDA




13C3-PFBS




13C3-PFHxS




13C8-PFOS

BATTELLE

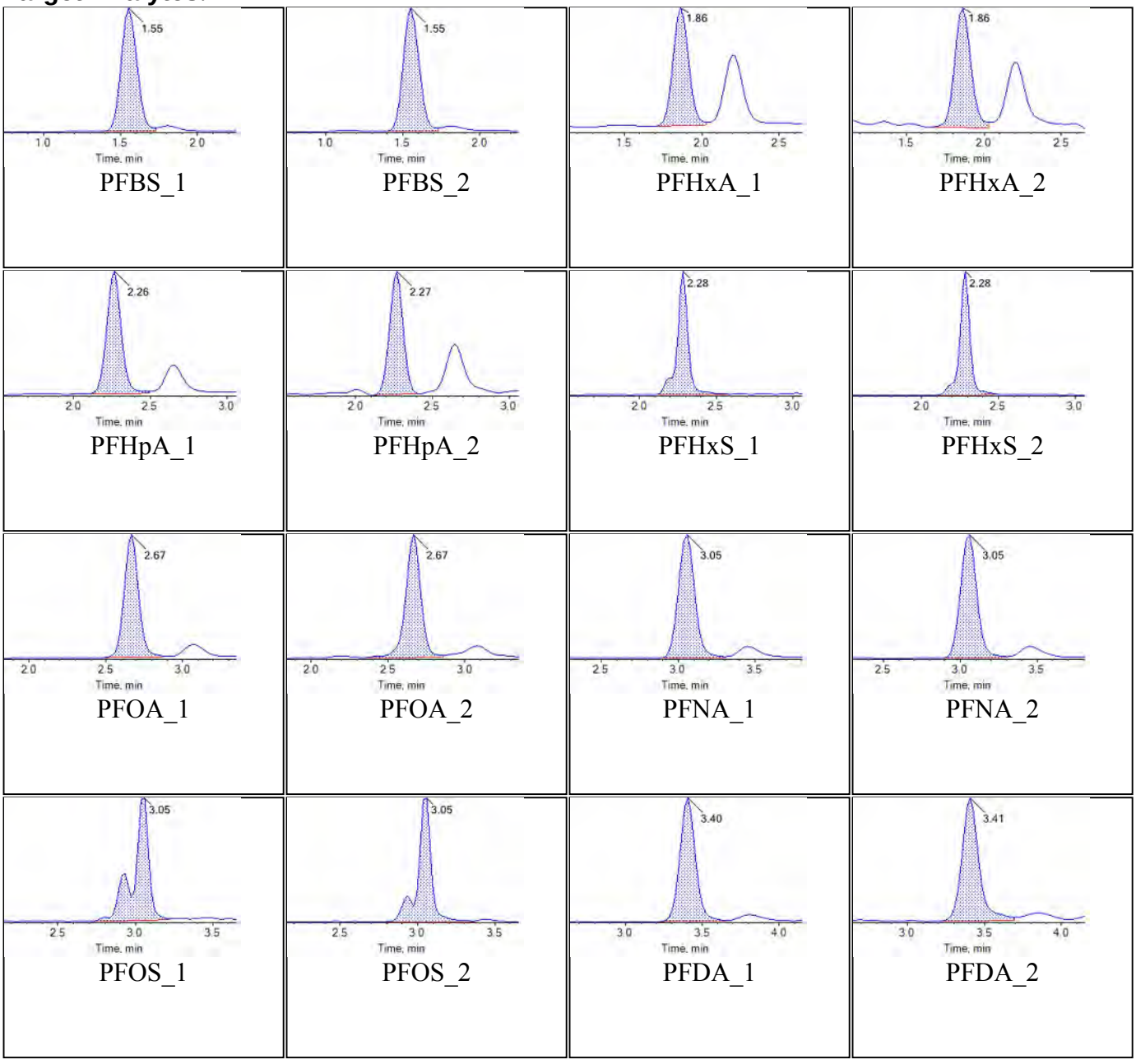
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:35:04 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY45 ICC | **Injection Vial** | 10 |
| **Sample ID** | ICC | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T00:03:55 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Chromatograms

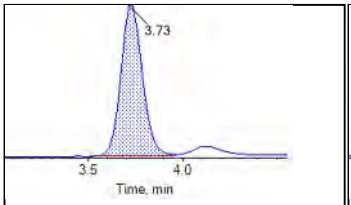
### Target Analytes:



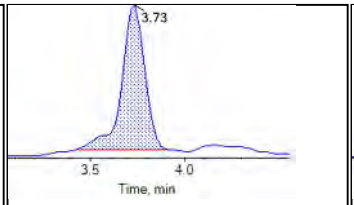
BATTELLE

Chromatogram Report

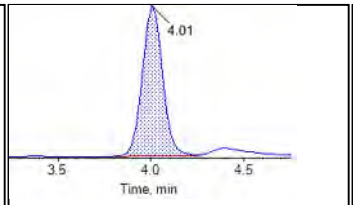
Created with Analyst Reporter
Printed: 29/08/2018 2:35:04 PM



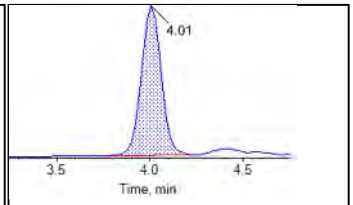
PFUnA_1



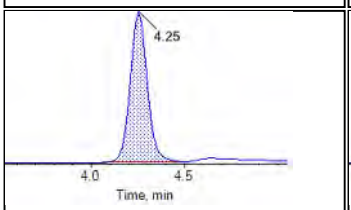
PFUnA_2



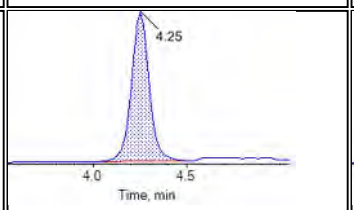
PFDoA_1



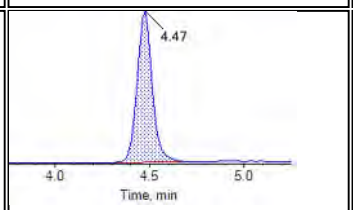
PFDoA_2



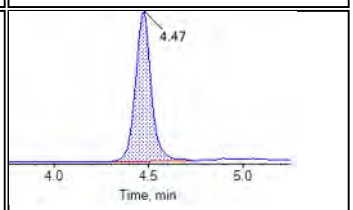
PFTrDA_1



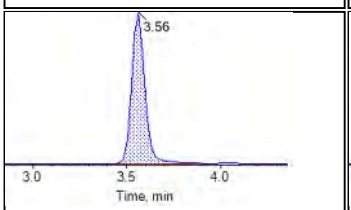
PFTrDA_2



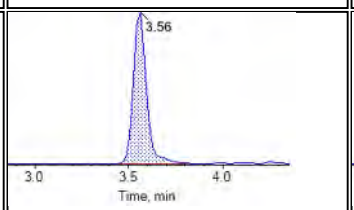
PFTeDA_1



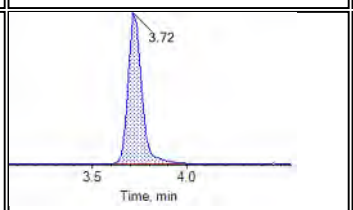
PFTeDA_2



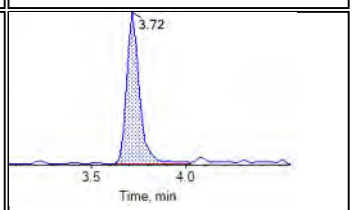
NMeFOSAA_1



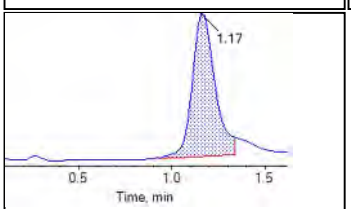
NMeFOSAA_2



NEtFOSAA_1



NEtFOSAA_2



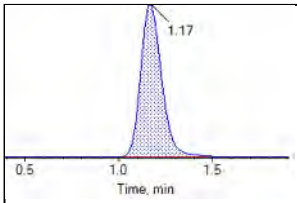
PFBA

**Internal Standards:**

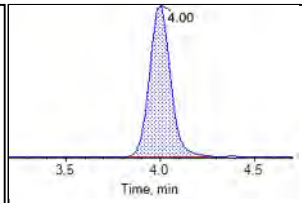
BATTELLE

Chromatogram Report

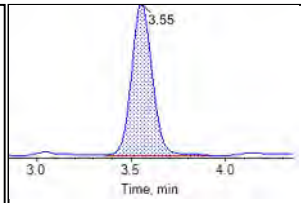
Created with Analyst Reporter
Printed: 29/08/2018 2:35:04 PM



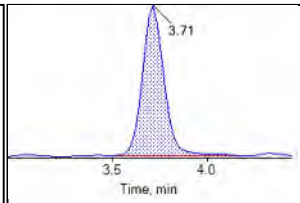

13C4-PFBA



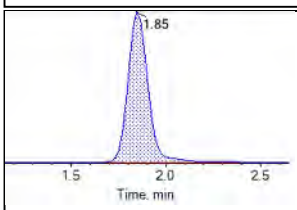

13C2-PFDoA



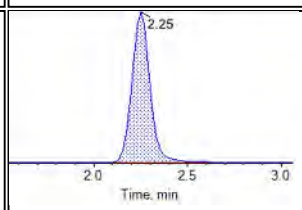

d3-MeFOSAA



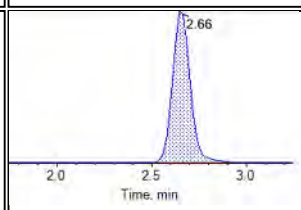

d5-EtFOSAA



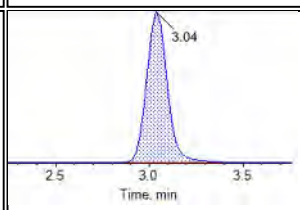

13C5-PFHxA



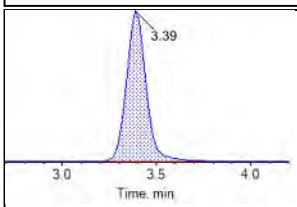

13C4-PFHpA



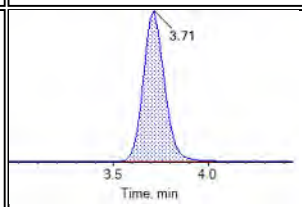

13C8-PFOA



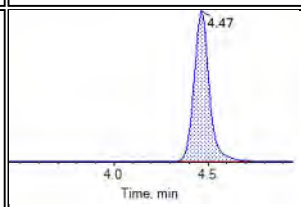

13C9-PFNA



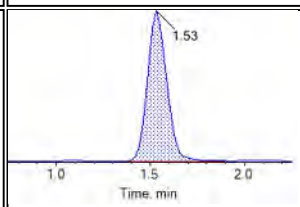

13C6-PFDA



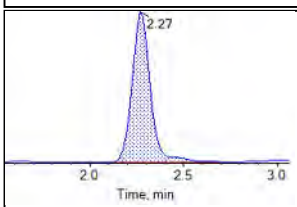

13C7-PFUnA



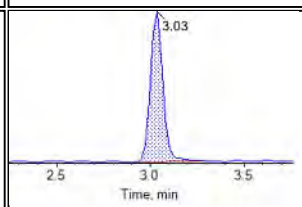

13C2-PFTeDA




13C3-PFBS




13C3-PFHxS




13C8-PFOS

BATTELLE

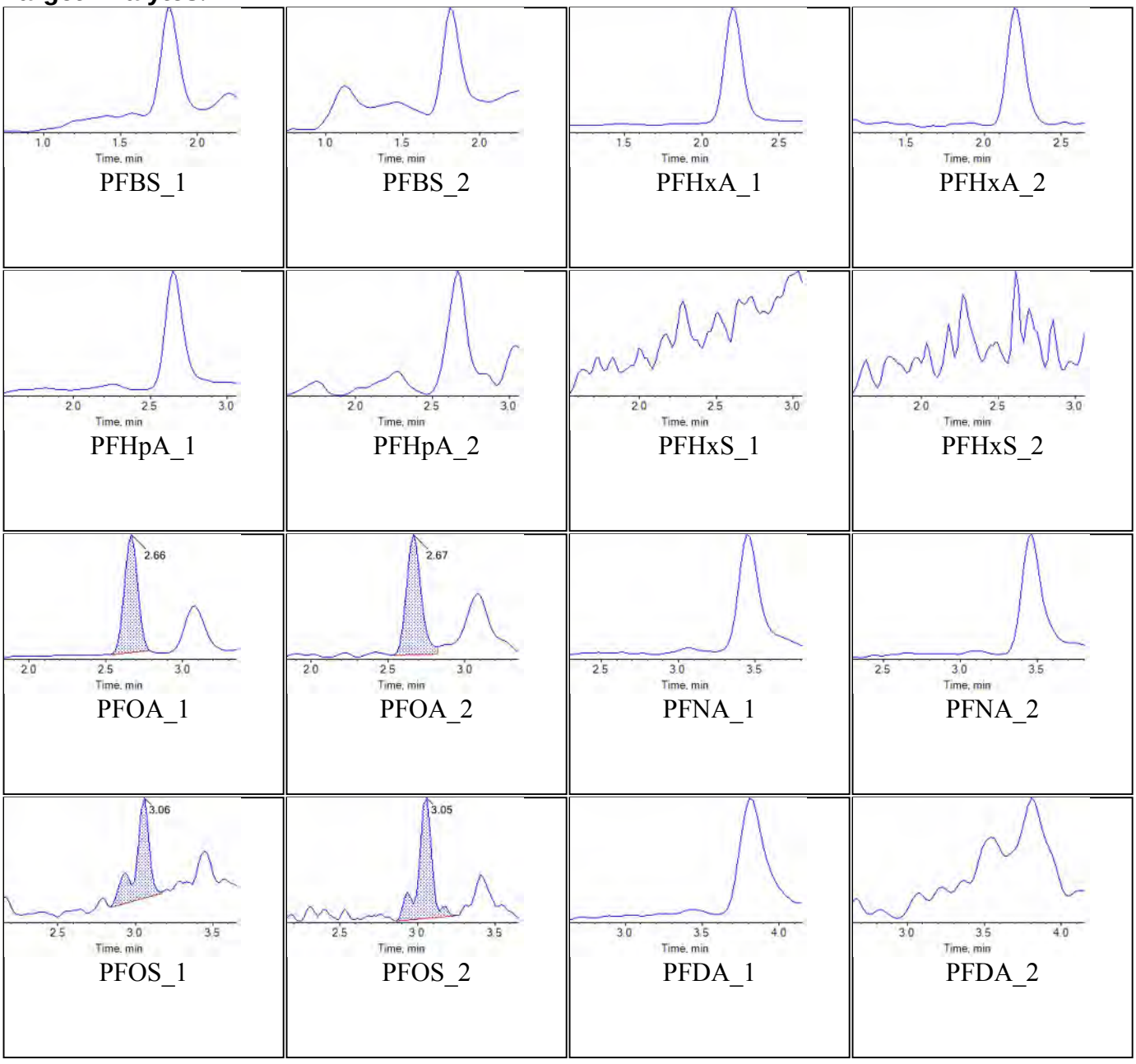
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:35:28 PM

| | | | |
|---|---|---|---|
| **Sample Name** | CR635PB-FS(3) | **Injection Vial** | 15 |
| **Sample ID** | Procedural Blank | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:09:11 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Chromatograms

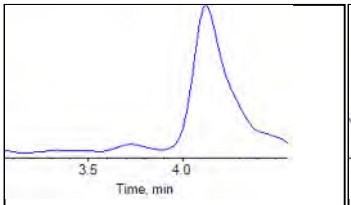
### Target Analytes:



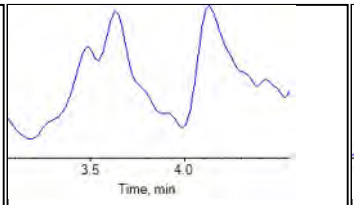
BATTELLE

Chromatogram Report

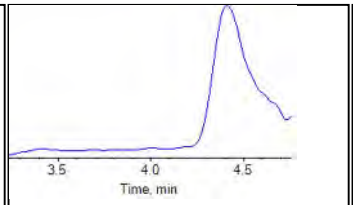
Created with Analyst Reporter
Printed: 29/08/2018 2:35:28 PM



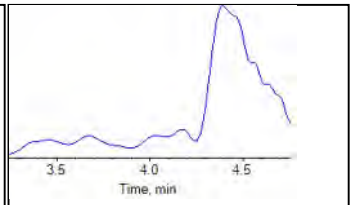
PFUnA_1



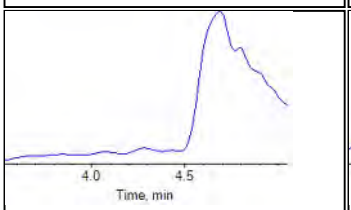
PFUnA_2



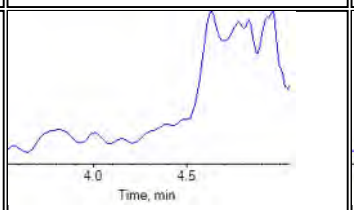
PFDoA_1



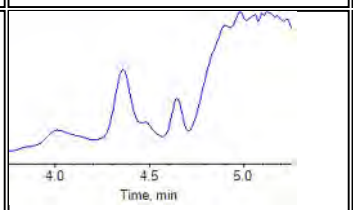
PFDoA_2



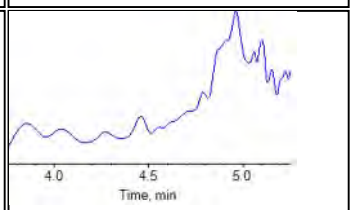
PFTrDA_1



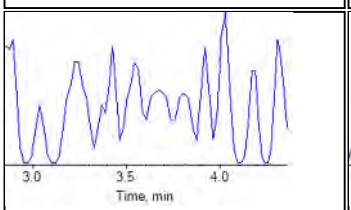
PFTrDA_2



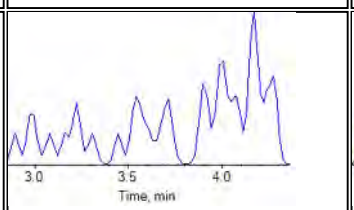
PFTeDA_1



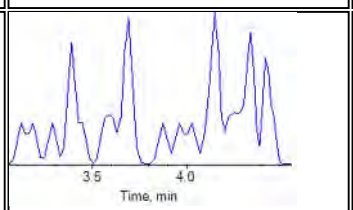
PFTeDA_2



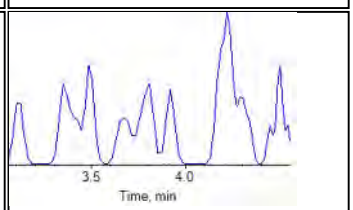
NMeFOSAA_1



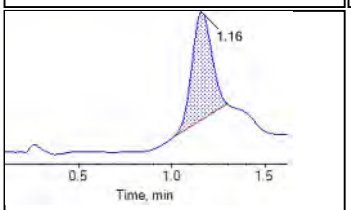
NMeFOSAA_2



NEtFOSAA_1



NEtFOSAA_2



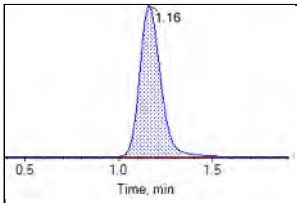
PFBA

**Internal Standards:**

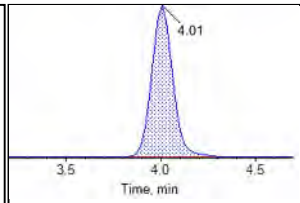
BATTELLE

Chromatogram Report

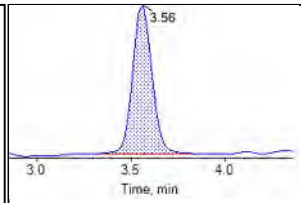
Created with Analyst Reporter
Printed: 29/08/2018 2:35:28 PM



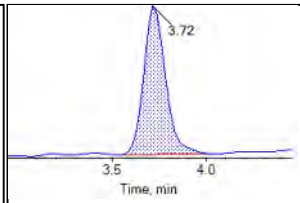

13C4-PFBA



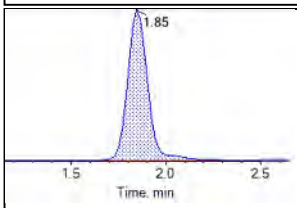

13C2-PFDoA



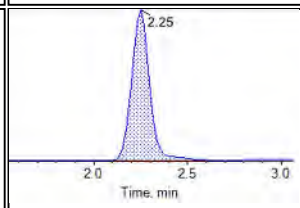

d3-MeFOSAA



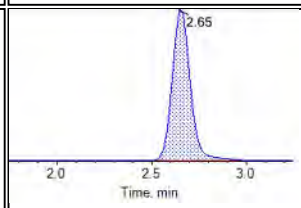

d5-EtFOSAA



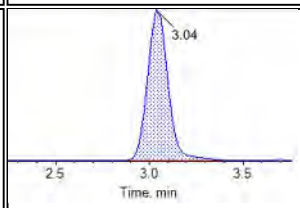

13C5-PFHxA



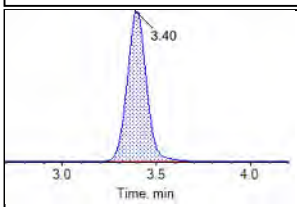

13C4-PFHpA



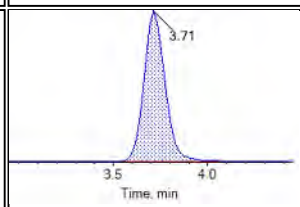

13C8-PFOA



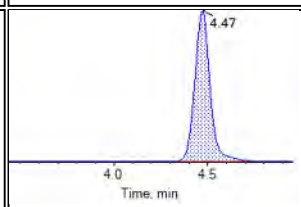

13C9-PFNA



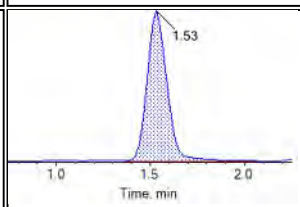

13C6-PFDA



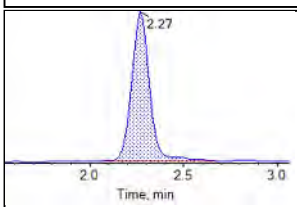

13C7-PFUnA



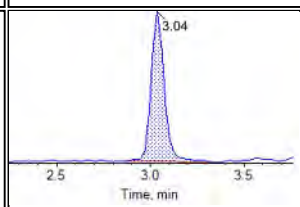

13C2-PFTeDA




13C3-PFBS




13C3-PFHxS




13C8-PFOS

BATTELLE

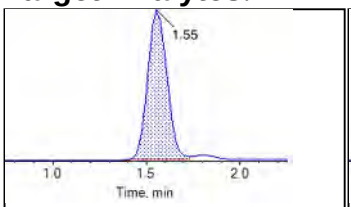
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:35:34 PM

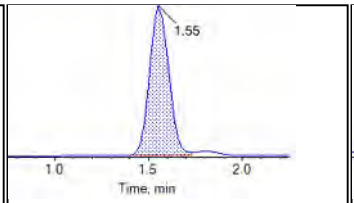
| | | | |
|---|---|---|---|
| **Sample Name** | CR636LCS-FS(3) | **Injection Vial** | 16 |
| **Sample ID** | Laboratory Control Sample | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:20:03 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Chromatograms

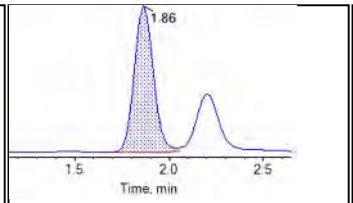
### Target Analytes:



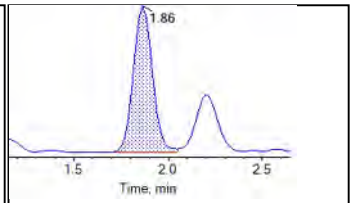
PFBS_1



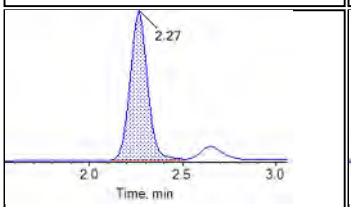
PFBS_2



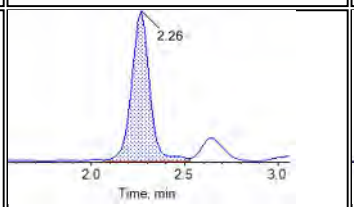
PFHxA_1



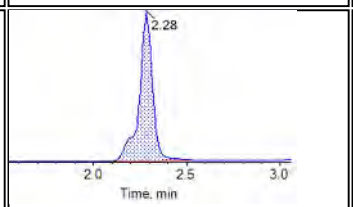
PFHxA_2



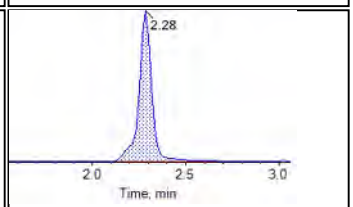
PFHpA_1



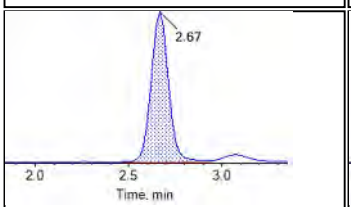
PFHpA_2



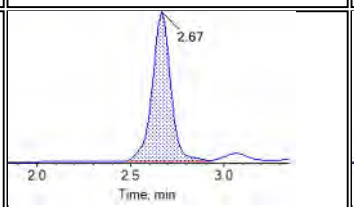
PFHxS_1



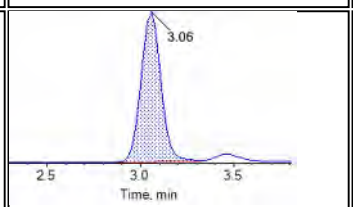
PFHxS_2



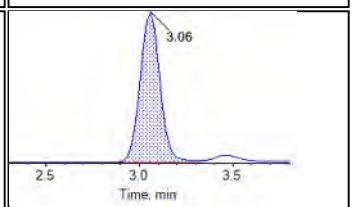
PFOA_1



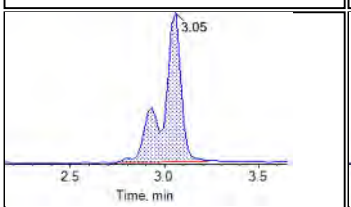
PFOA_2



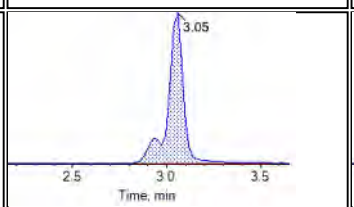
PFNA_1



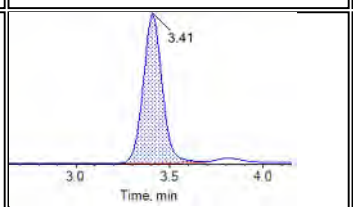
PFNA_2



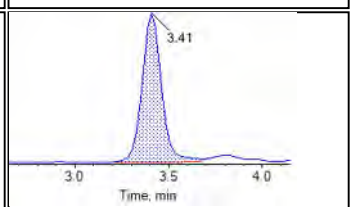
PFOS_1



PFOS_2



PFDA_1

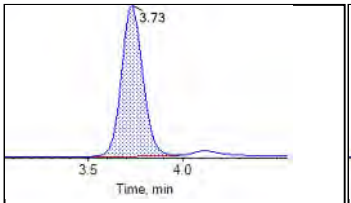


PFDA_2

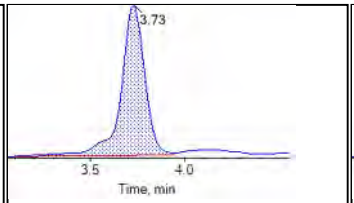
BATTELLE

Chromatogram Report

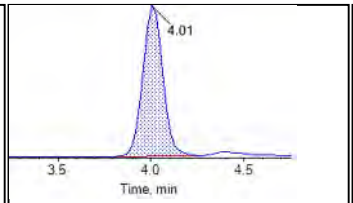
Created with Analyst Reporter
Printed: 29/08/2018 2:35:34 PM



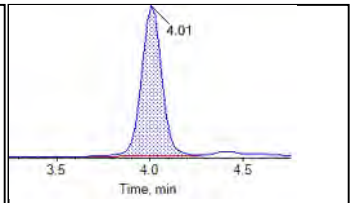
PFUnA_1



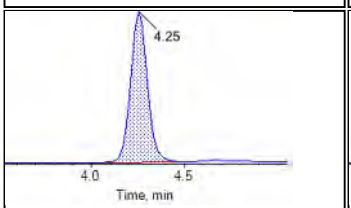
PFUnA_2



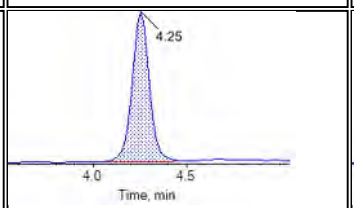
PFDoA_1



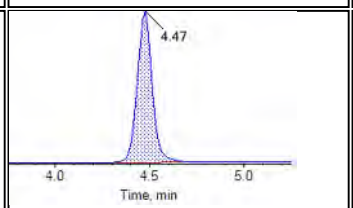
PFDoA_2



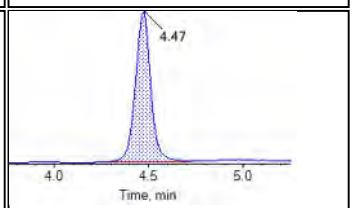
PFTrDA_1



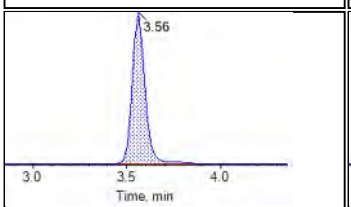
PFTrDA_2



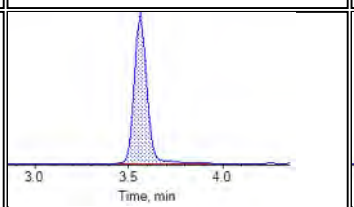
PFTeDA_1



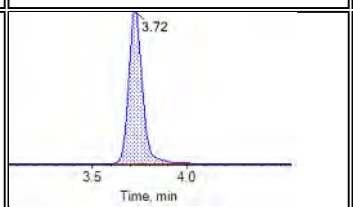
PFTeDA_2



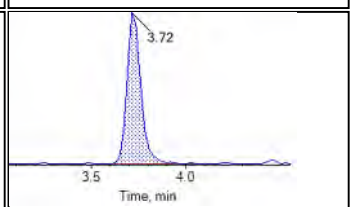
NMeFOSAA_1



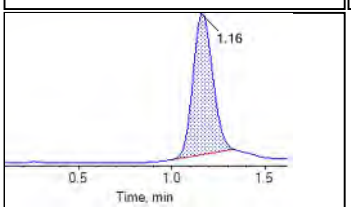
NMeFOSAA_2



NEtFOSAA_1



NEtFOSAA_2



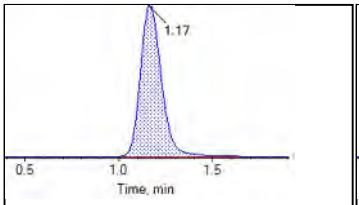
PFBA

**Internal Standards:**

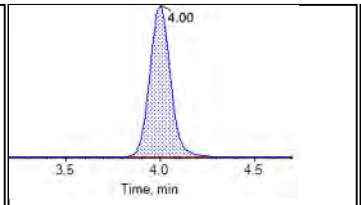
BATTELLE

Chromatogram Report

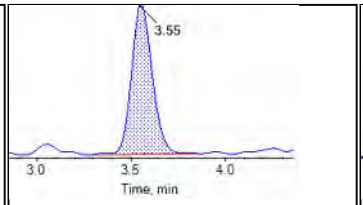
Created with Analyst Reporter
Printed: 29/08/2018 2:35:34 PM



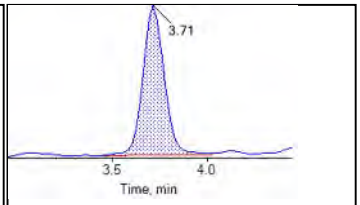

13C4-PFBA



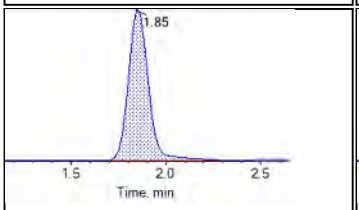

13C2-PFDoA



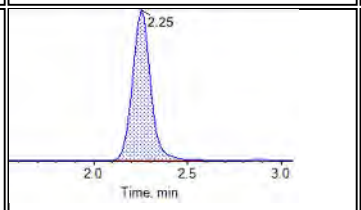

d3-MeFOSAA



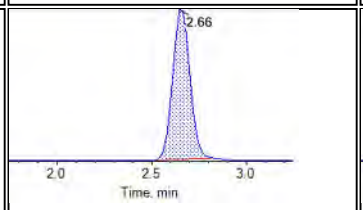

d5-EtFOSAA



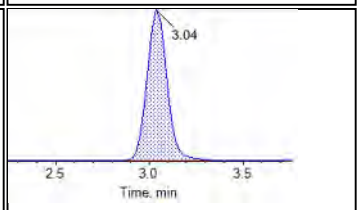

13C5-PFHxA



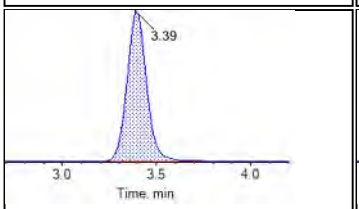

13C4-PFHpA



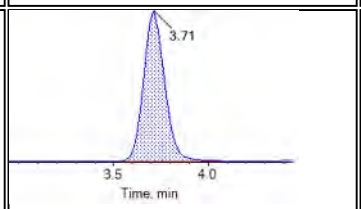

13C8-PFOA



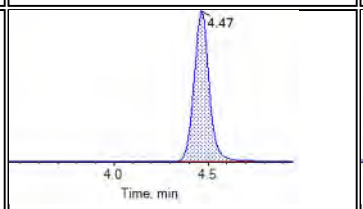

13C9-PFNA



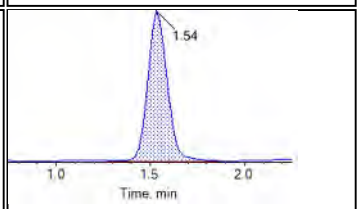

13C6-PFDA



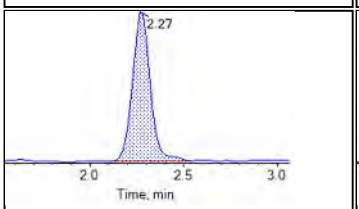

13C7-PFUnA



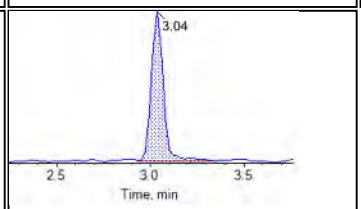

13C2-PFTeDA




13C3-PFBS




13C3-PFHxS




13C8-PFOS

BATTELLE

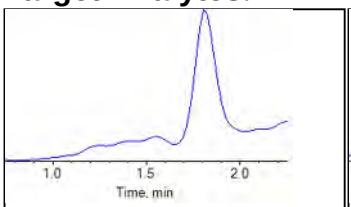
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:35:48 PM

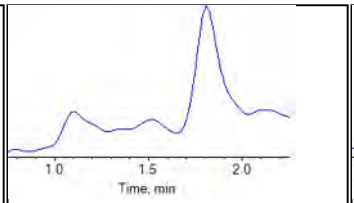
| | | | |
|---|---|---|---|
| **Sample Name** | J7401-FS(3) | **Injection Vial** | 17 |
| **Sample ID** | NASB-BLL15-GWFB01- | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:30:55 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Chromatograms

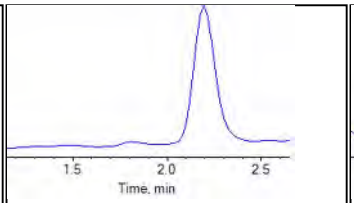
### Target Analytes:



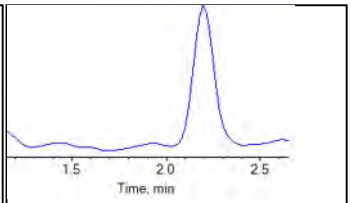
PFBS_1



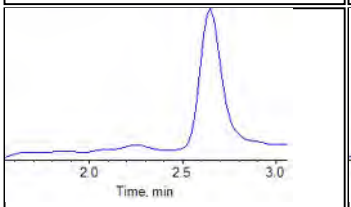
PFBS_2



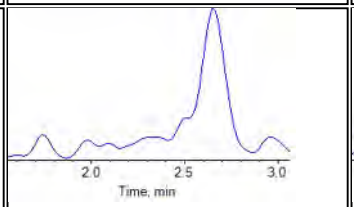
PFHxA_1



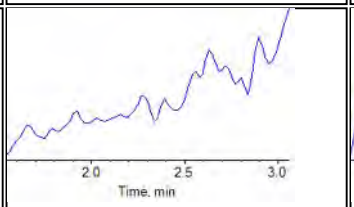
PFHxA_2



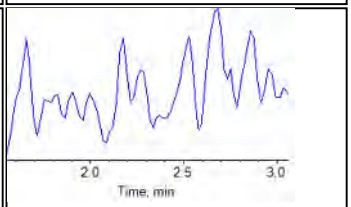
PFHpA_1



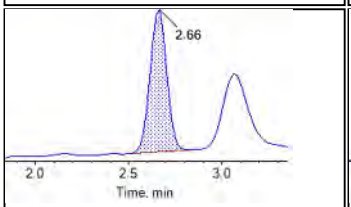
PFHpA_2



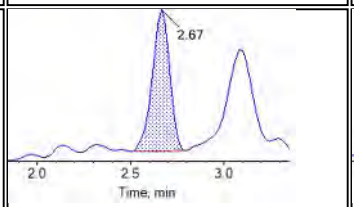
PFHxS_1



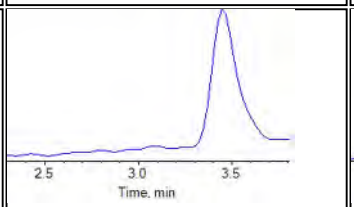
PFHxS_2



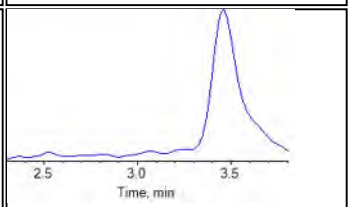
PFOA_1



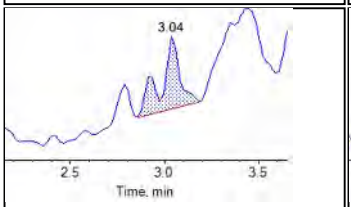
PFOA_2



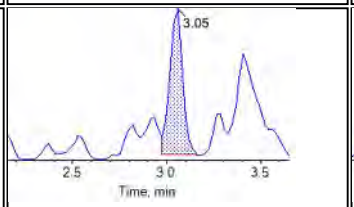
PFNA_1



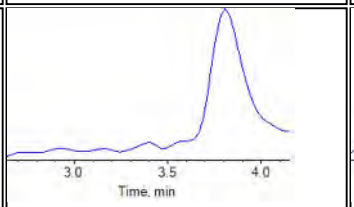
PFNA_2



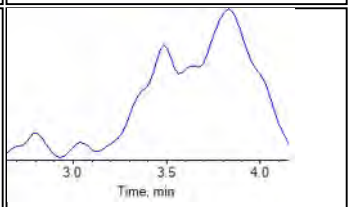
PFOS_1



PFOS_2



PFDA_1

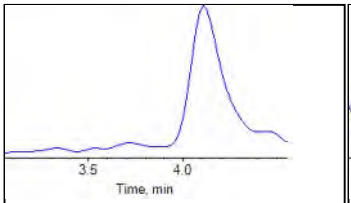


PFDA_2

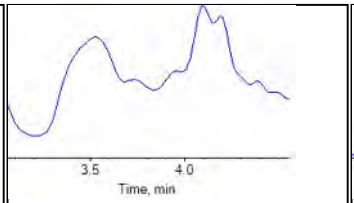
BATTELLE

Chromatogram Report

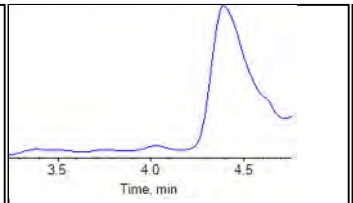
Created with Analyst Reporter
Printed: 29/08/2018 2:35:48 PM



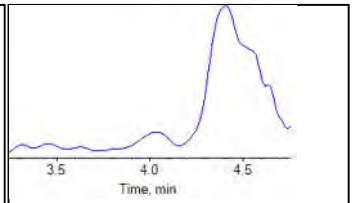
PFUnA_1



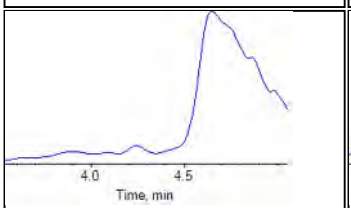
PFUnA_2



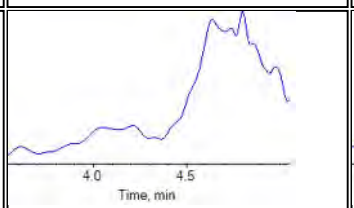
PFDoA_1



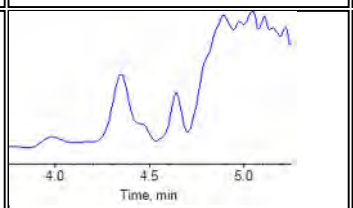
PFDoA_2



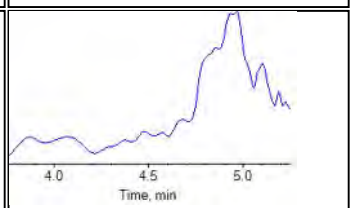
PFTrDA_1



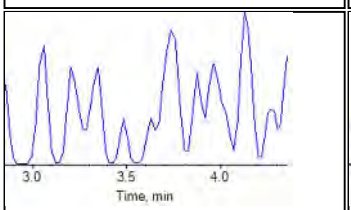
PFTrDA_2



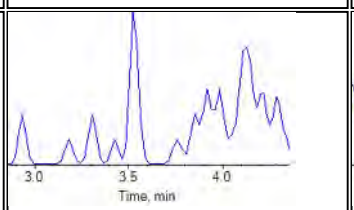
PFTeDA_1



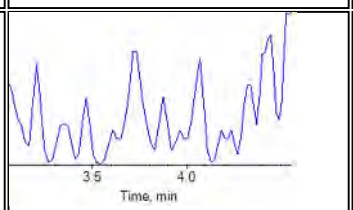
PFTeDA_2



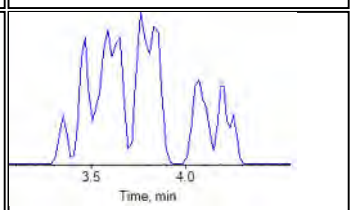
NMeFOSAA_1



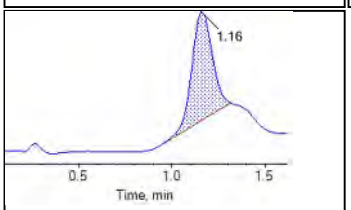
NMeFOSAA_2



NEtFOSAA_1



NEtFOSAA_2



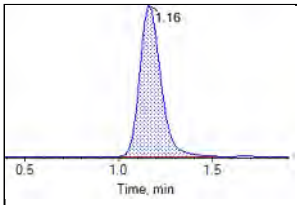
PFBA

**Internal Standards:**

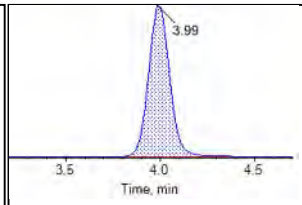
BATTELLE

Chromatogram Report

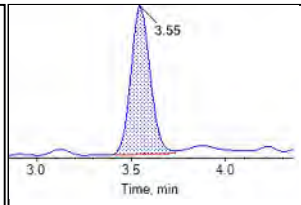
Created with Analyst Reporter
Printed: 29/08/2018 2:35:48 PM



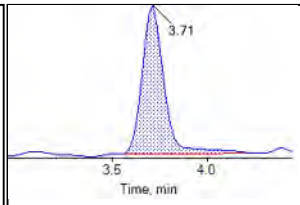

13C4-PFBA



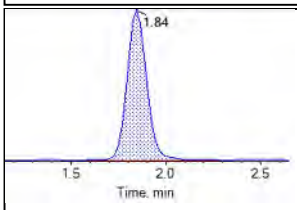

13C2-PFDoA



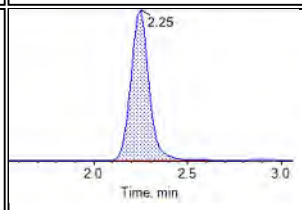

d3-MeFOSAA



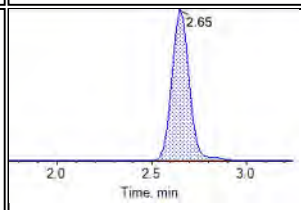

d5-EtFOSAA



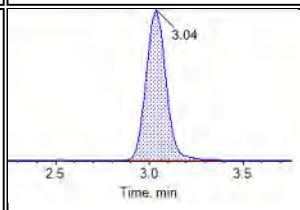

13C5-PFHxA



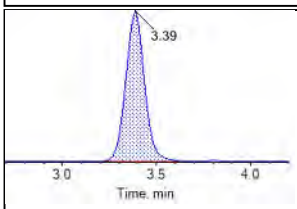

13C4-PFHpA



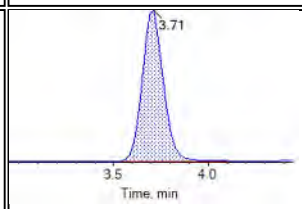

13C8-PFOA



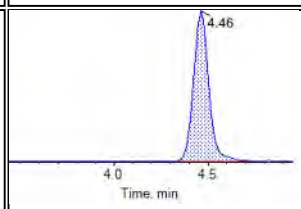

13C9-PFNA



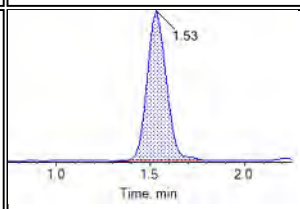

13C6-PFDA



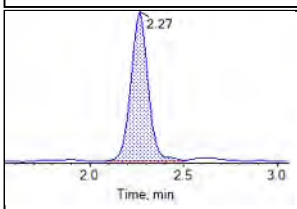

13C7-PFUnA



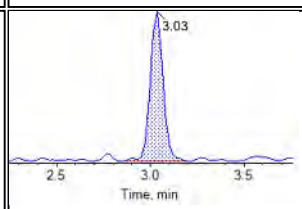

13C2-PFTeDA




13C3-PFBS




13C3-PFHxS




13C8-PFOS

BATTELLE

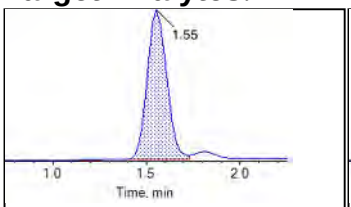
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:35:58 PM

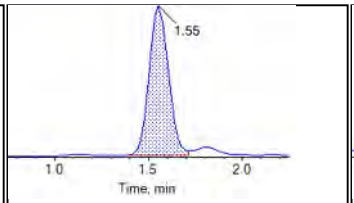
| | | | |
|---|---|---|---|
| **Sample Name** | JY41 CCV | **Injection Vial** | 18 |
| **Sample ID** | CCV | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:41:46 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Chromatograms

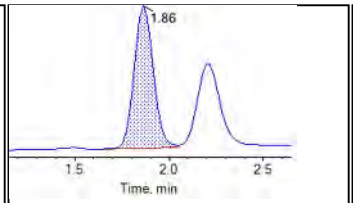
### Target Analytes:



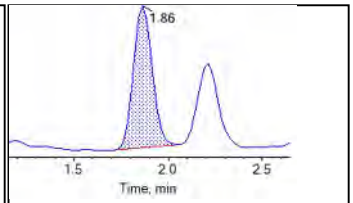
PFBS_1



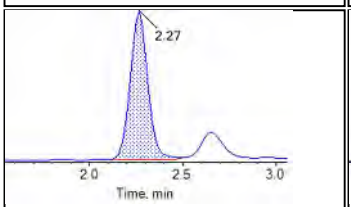
PFBS_2



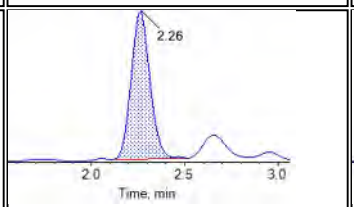
PFHxA_1



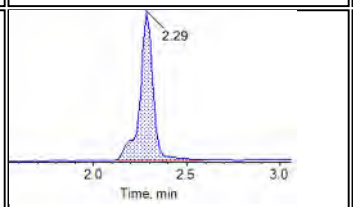
PFHxA_2



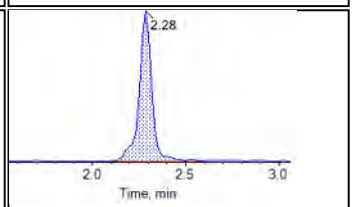
PFHpA_1



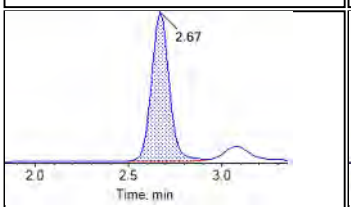
PFHpA_2



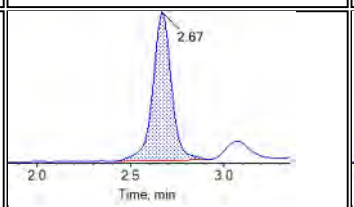
PFHxS_1



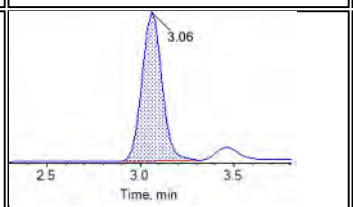
PFHxS_2



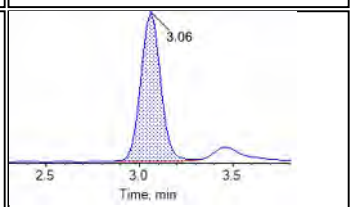
PFOA_1



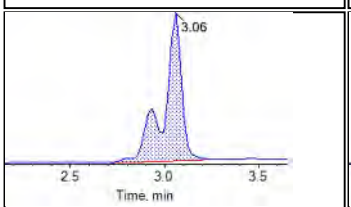
PFOA_2



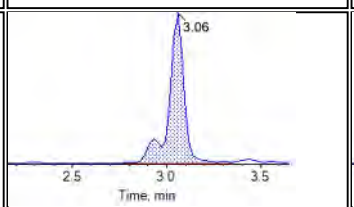
PFNA_1



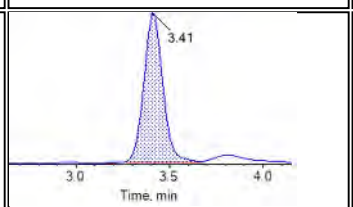
PFNA_2



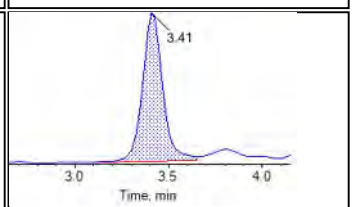
PFOS_1



PFOS_2



PFDA_1

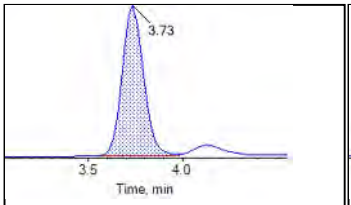


PFDA_2

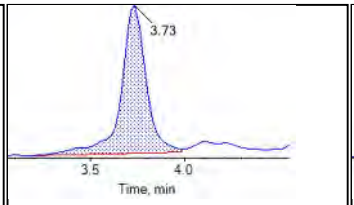
BATTELLE

Chromatogram Report

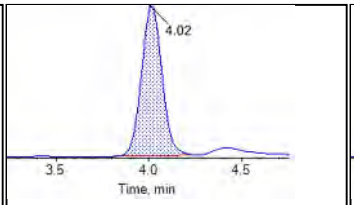
Created with Analyst Reporter
Printed: 29/08/2018 2:35:58 PM



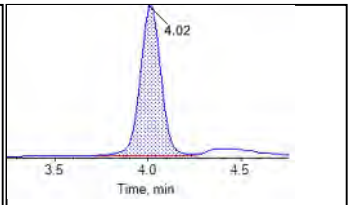
PFUnA_1



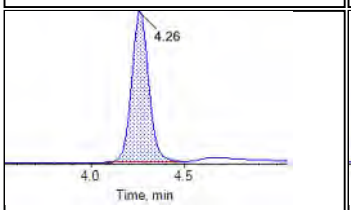
PFUnA_2



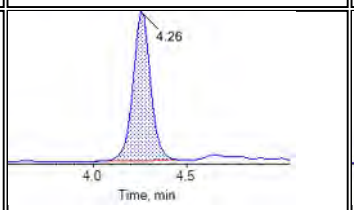
PFDoA_1



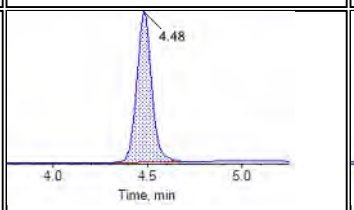
PFDoA_2



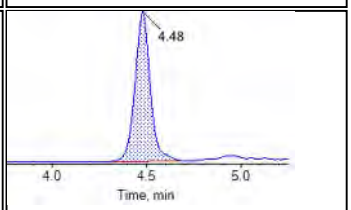
PFTrDA_1



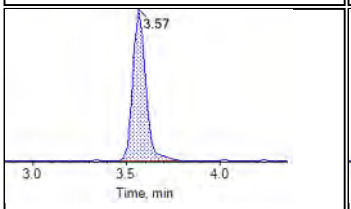
PFTrDA_2



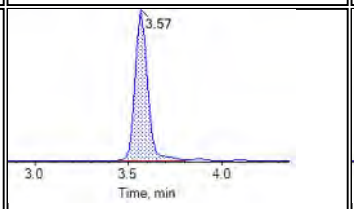
PFTeDA_1



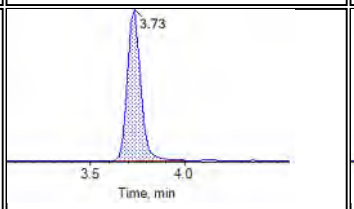
PFTeDA_2



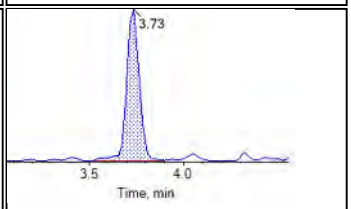
NMeFOSAA_1



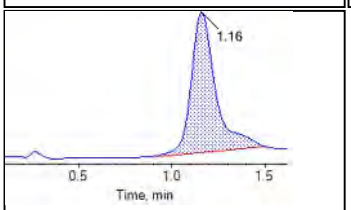
NMeFOSAA_2



NEtFOSAA_1



NEtFOSAA_2



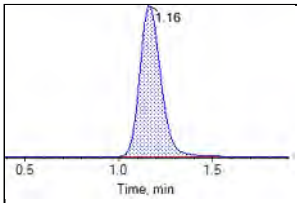
PFBA

**Internal Standards:**

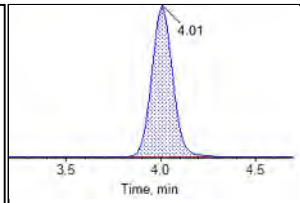
BATTELLE

Chromatogram Report

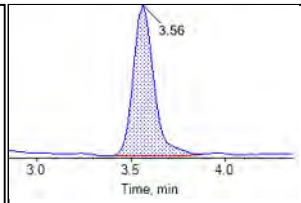
Created with Analyst Reporter
Printed: 29/08/2018 2:35:58 PM



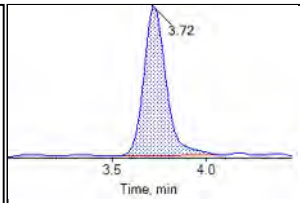

13C4-PFBA



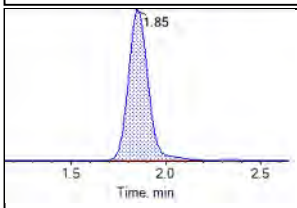

13C2-PFDoA



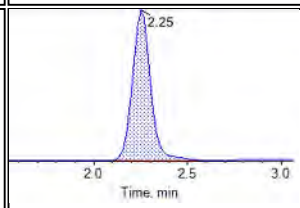

d3-MeFOSAA



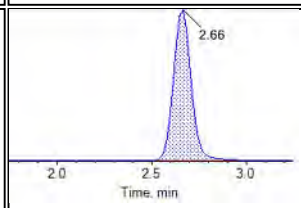

d5-EtFOSAA



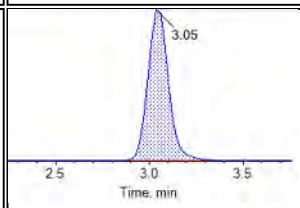

13C5-PFHxA



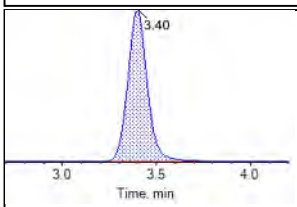

13C4-PFHpA



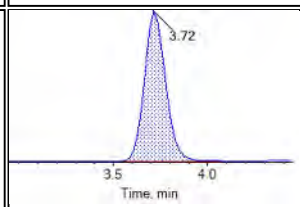

13C8-PFOA



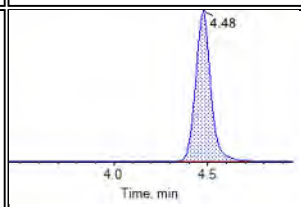

13C9-PFNA



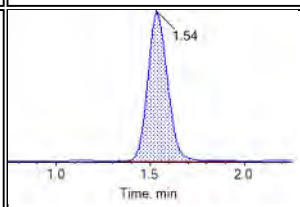

13C6-PFDA



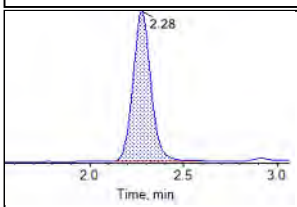

13C7-PFUnA



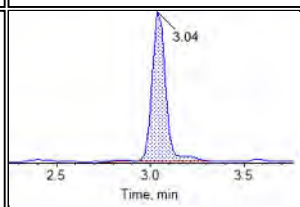

13C2-PFTeDA




13C3-PFBS




13C3-PFHxS




13C8-PFOS

BATTELLE

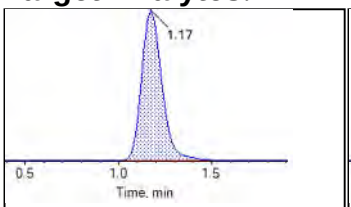
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:19:03 PM

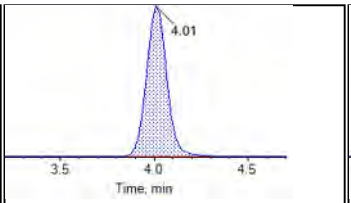
| | | | |
|---|---|---|---|
| **Sample Name** | JY38 | **Injection Vial** | 2 |
| **Sample ID** | L1 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:36:54 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Chromatograms

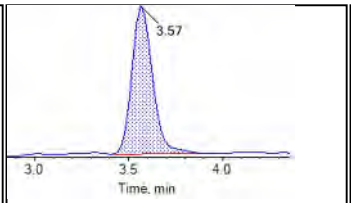
### Target Analytes:



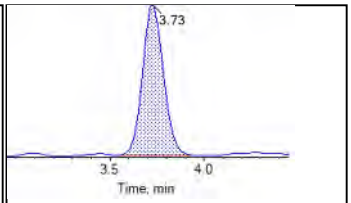
13C4-PFBA



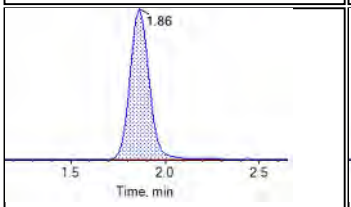
13C2-PFDoA



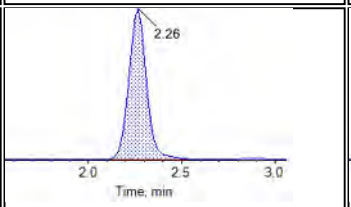
d3-MeFOSAA



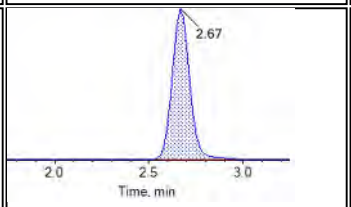
d5-EtFOSAA



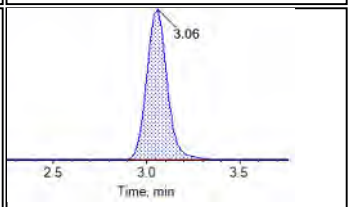
13C5-PFHxA



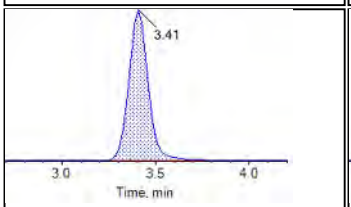
13C4-PFHpA



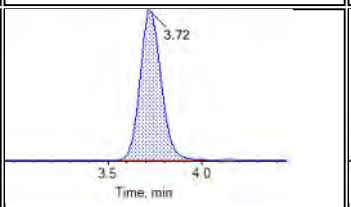
13C8-PFOA



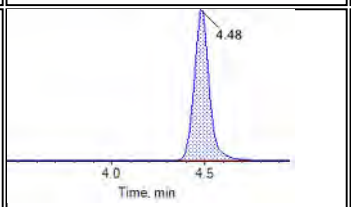
13C9-PFNA



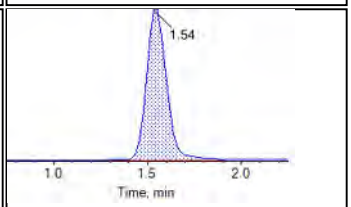
13C6-PFDA



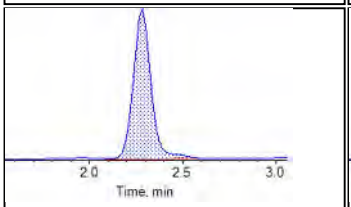
13C7-PFUnA



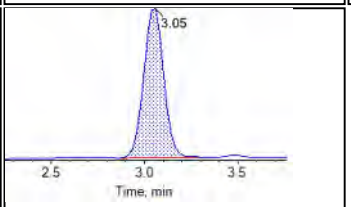
13C2-PFTeDA



13C3-PFBS



13C3-PFHxS



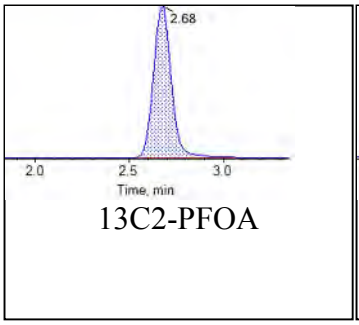
13C8-PFOS

BATTELLE

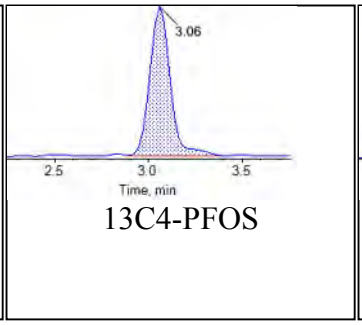
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:19:03 PM

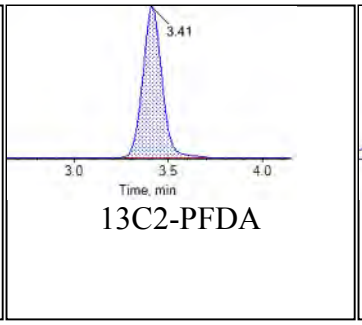
**Internal Standards:**



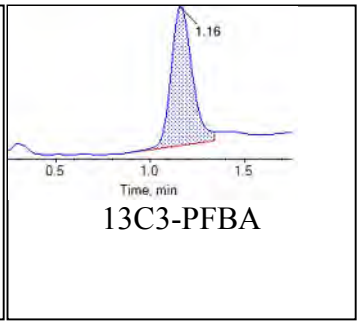

13C2-PFOA




13C4-PFOS




13C2-PFDA




13C3-PFBA

BATTELLE

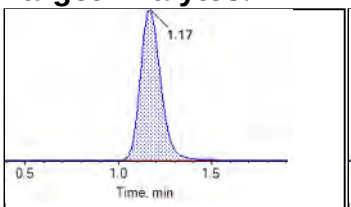
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:19:10 PM

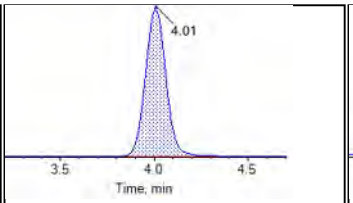
| | | | |
|---|---|---|---|
| **Sample Name** | JY39 | **Injection Vial** | 3 |
| **Sample ID** | L2 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:47:47 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Chromatograms

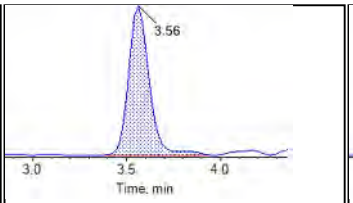
### Target Analytes:



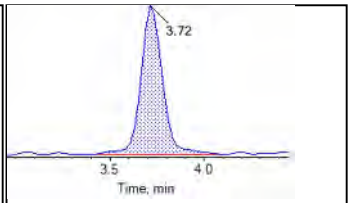
13C4-PFBA



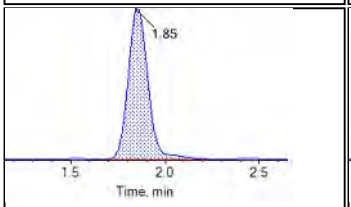
13C2-PFDoA



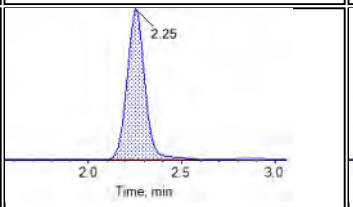
d3-MeFOSAA



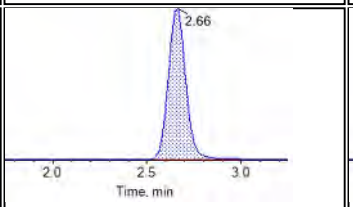
d5-EtFOSAA



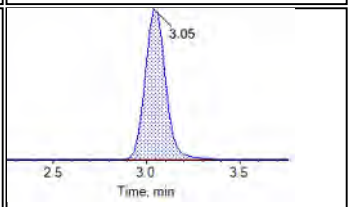
13C5-PFHxA



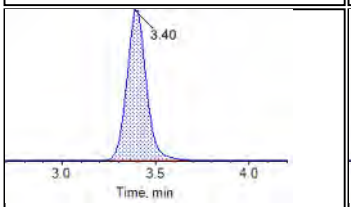
13C4-PFHpA



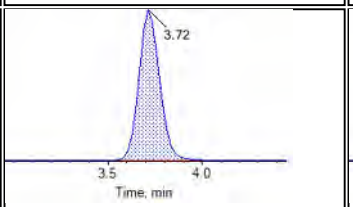
13C8-PFOA



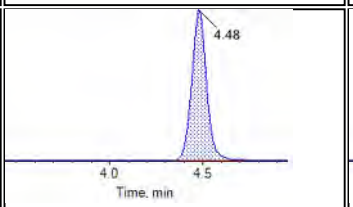
13C9-PFNA



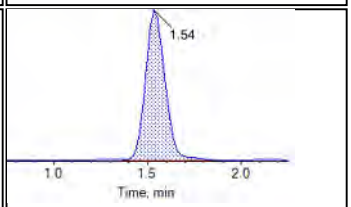
13C6-PFDA



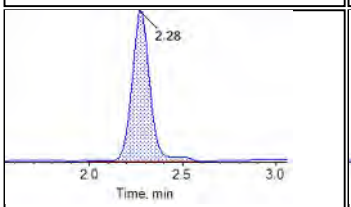
13C7-PFUnA



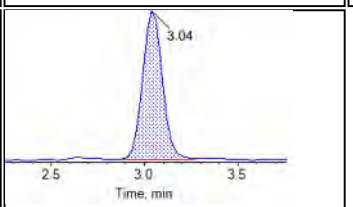
13C2-PFTeDA



13C3-PFBS



13C3-PFHxS



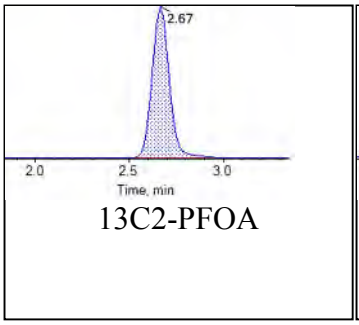
13C8-PFOS

BATTELLE

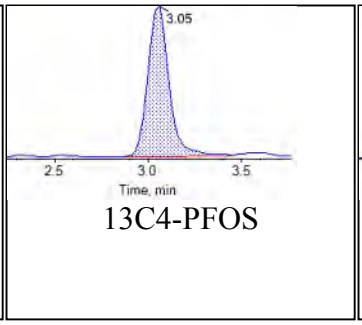
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:19:10 PM

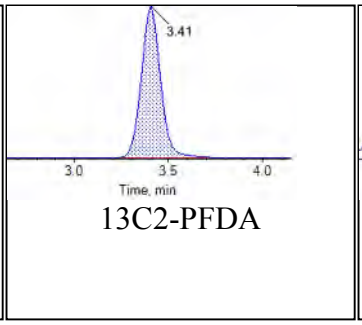
**Internal Standards:**



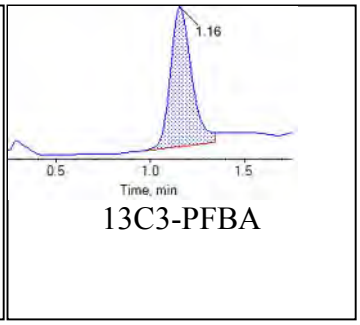

13C2-PFOA




13C4-PFOS




13C2-PFDA




13C3-PFBA

BATTELLE

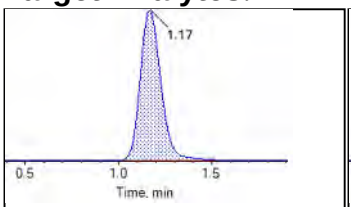
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:19:20 PM

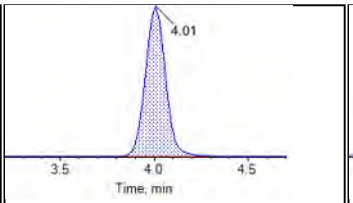
| | | | |
|---|---|---|---|
| **Sample Name** | JY40 | **Injection Vial** | 4 |
| **Sample ID** | L3 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:58:41 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Chromatograms

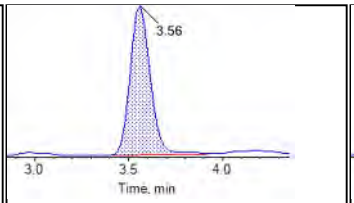
### Target Analytes:



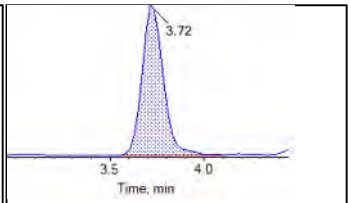
13C4-PFBA



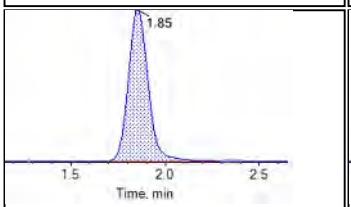
13C2-PFDoA



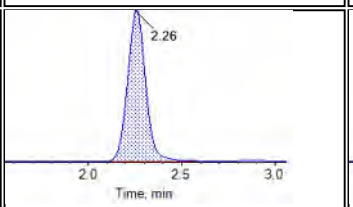
d3-MeFOSAA



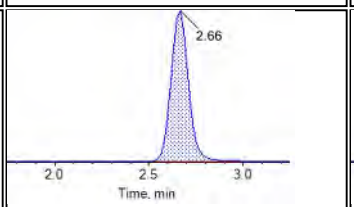
d5-EtFOSAA



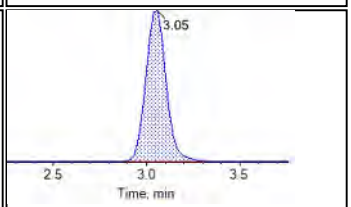
13C5-PFHxA



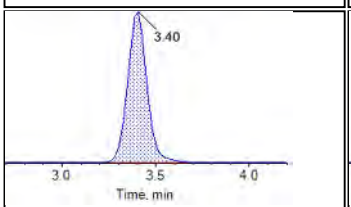
13C4-PFHpA



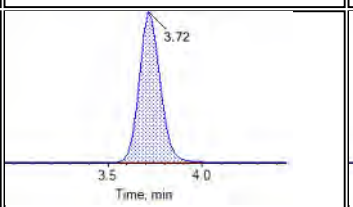
13C8-PFOA



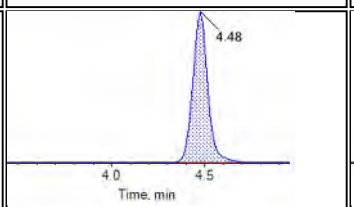
13C9-PFNA



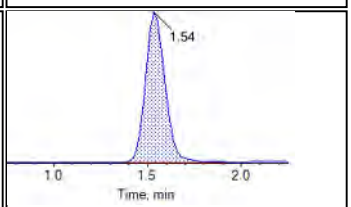
13C6-PFDA



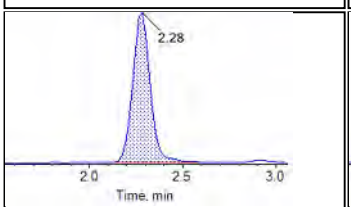
13C7-PFUnA



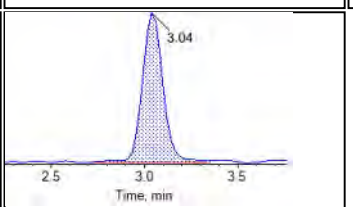
13C2-PFTeDA



13C3-PFBS



13C3-PFHxS



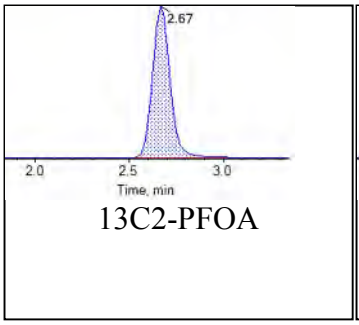
13C8-PFOS

BATTELLE

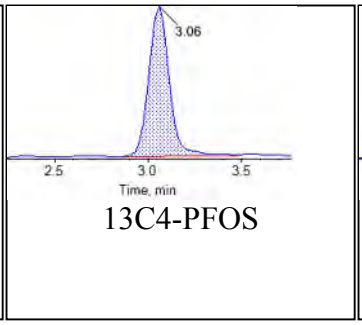
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:19:20 PM

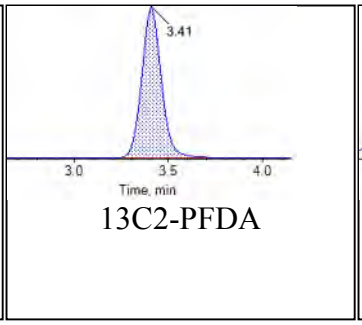
**Internal Standards:**



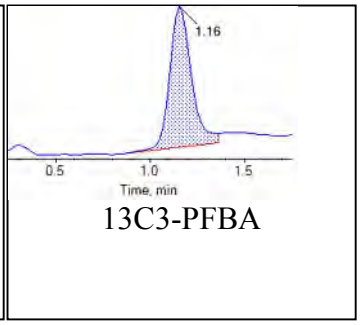

13C2-PFOA




13C4-PFOS




13C2-PFDA




13C3-PFBA

BATTELLE

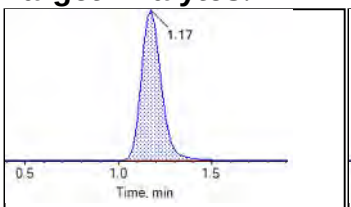
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:19:31 PM

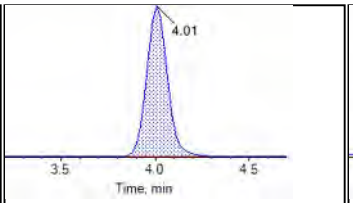
| | | | |
|---|---|---|---|
| **Sample Name** | JY41 | **Injection Vial** | 5 |
| **Sample ID** | L4 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:09:34 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Chromatograms

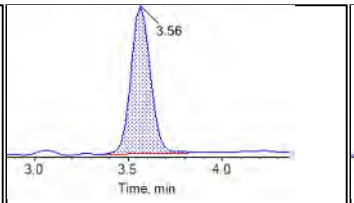
### Target Analytes:



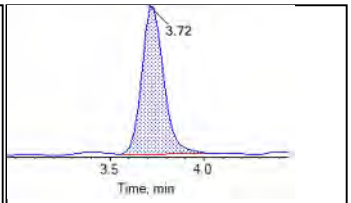
13C4-PFBA



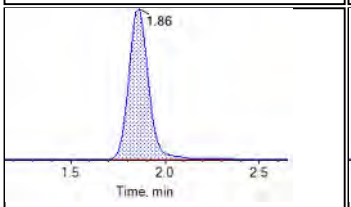
13C2-PFDoA



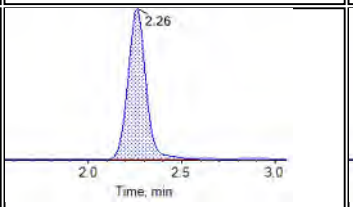
d3-MeFOSAA



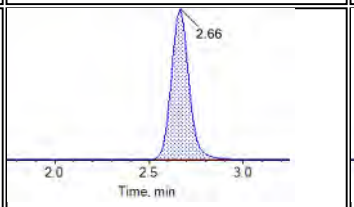
d5-EtFOSAA



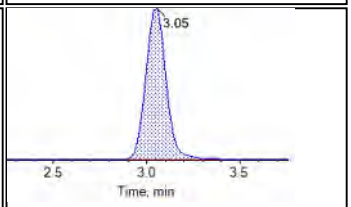
13C5-PFHxA



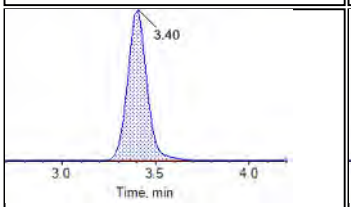
13C4-PFHpA



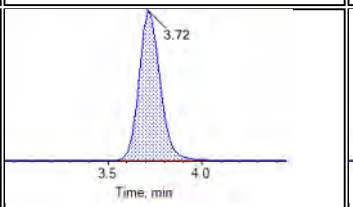
13C8-PFOA



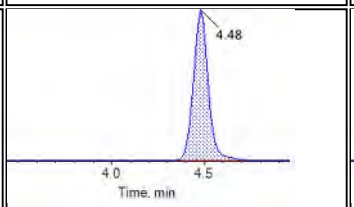
13C9-PFNA



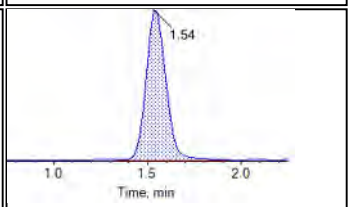
13C6-PFDA



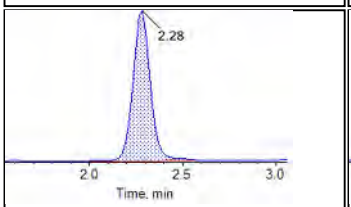
13C7-PFUnA



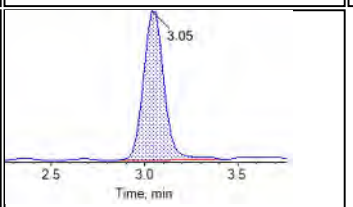
13C2-PFTeDA



13C3-PFBS



13C3-PFHxS



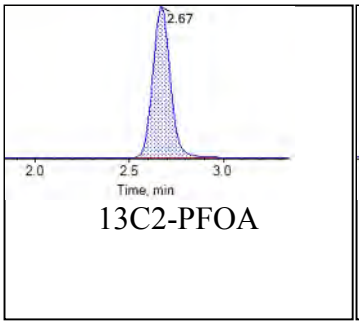
13C8-PFOS

BATTELLE

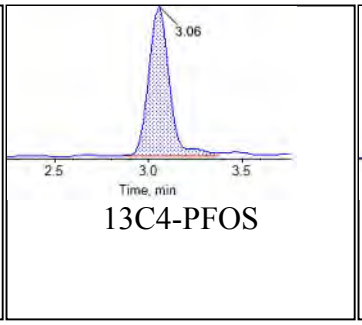
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:19:31 PM

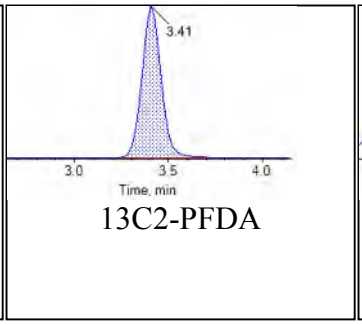
**Internal Standards:**



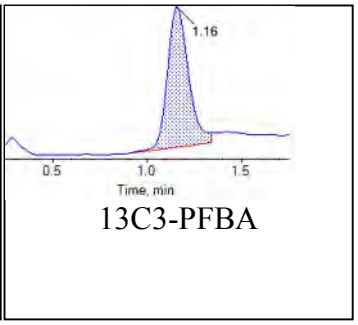

13C2-PFOA




13C4-PFOS




13C2-PFDA




13C3-PFBA

BATTELLE

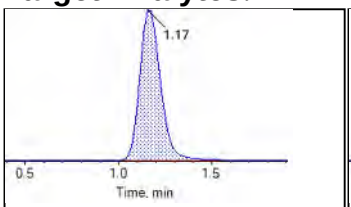
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:19:37 PM

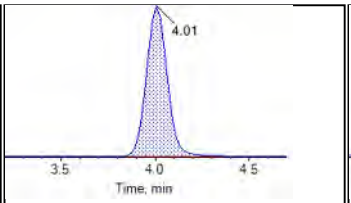
| | | | |
|---|---|---|---|
| **Sample Name** | JY42 | **Injection Vial** | 6 |
| **Sample ID** | L5 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:20:26 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Chromatograms

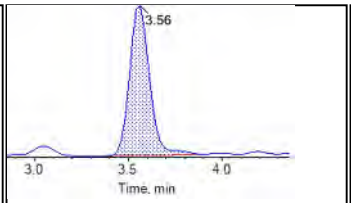
### Target Analytes:



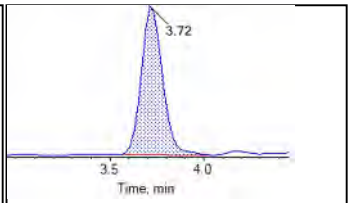
13C4-PFBA



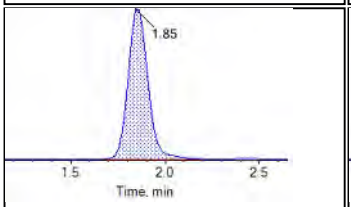
13C2-PFDoA



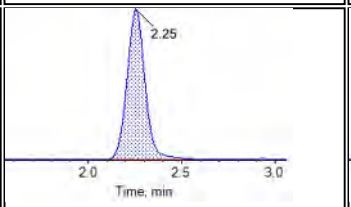
d3-MeFOSAA



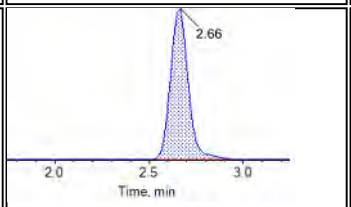
d5-EtFOSAA



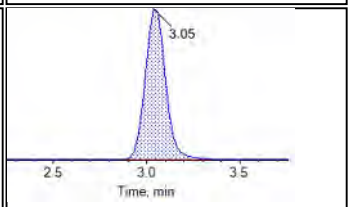
13C5-PFHxA



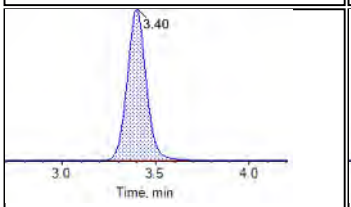
13C4-PFHpA



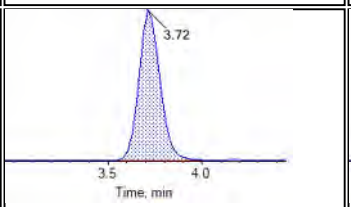
13C8-PFOA



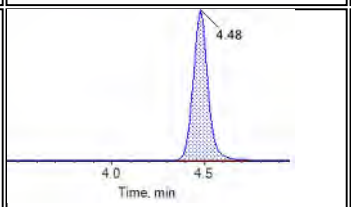
13C9-PFNA



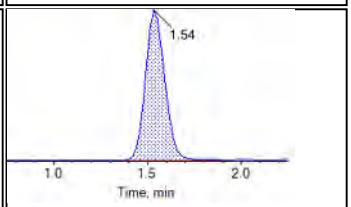
13C6-PFDA



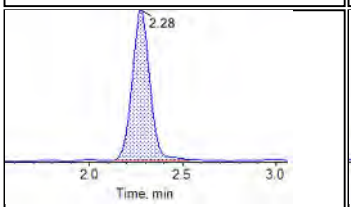
13C7-PFUnA



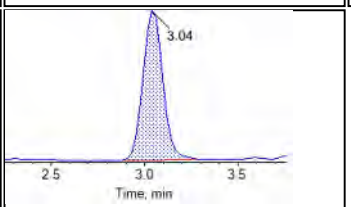
13C2-PFTeDA



13C3-PFBS



13C3-PFHxS



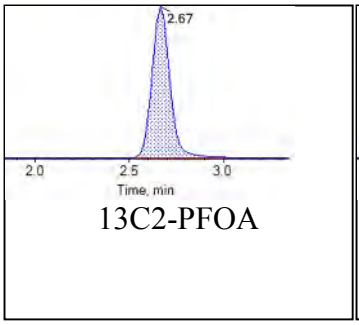
13C8-PFOS

BATTELLE

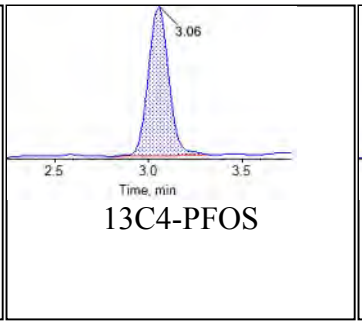
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:19:37 PM

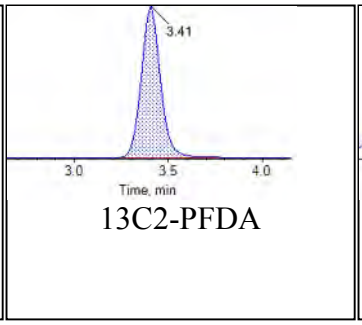
**Internal Standards:**



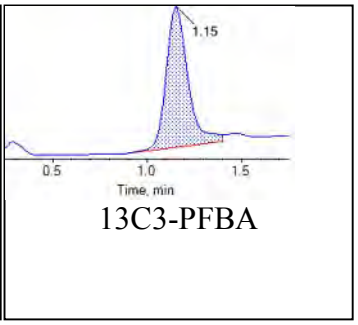

13C2-PFOA




13C4-PFOS




13C2-PFDA




13C3-PFBA

BATTELLE

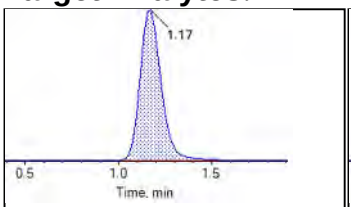
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:19:43 PM

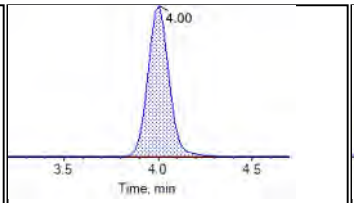
| | | | |
|---|---|---|---|
| **Sample Name** | JY43 | **Injection Vial** | 7 |
| **Sample ID** | L6 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:31:18 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Chromatograms

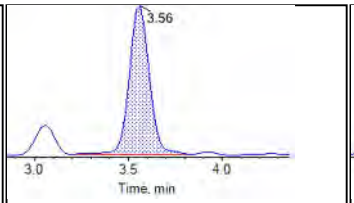
### Target Analytes:



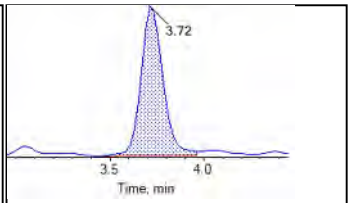
13C4-PFBA



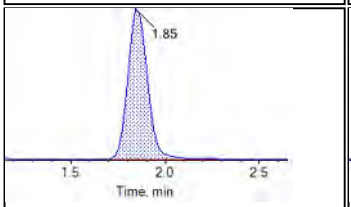
13C2-PFDoA



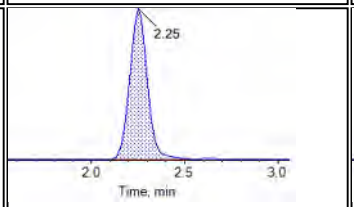
d3-MeFOSAA



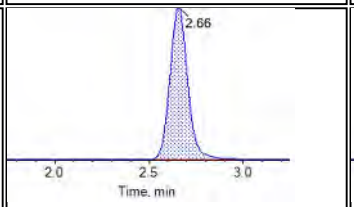
d5-EtFOSAA



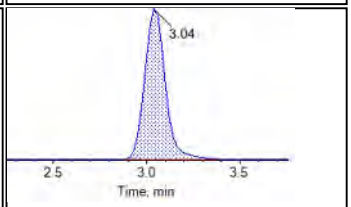
13C5-PFHxA



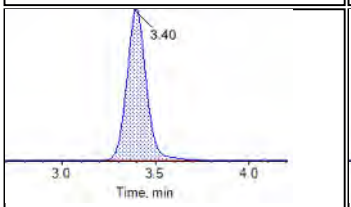
13C4-PFHpA



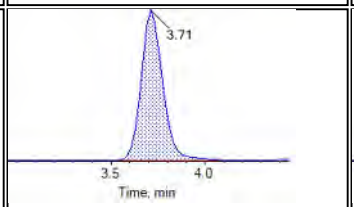
13C8-PFOA



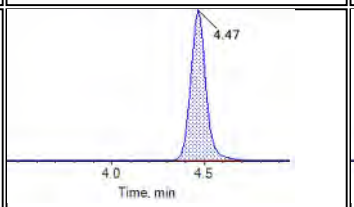
13C9-PFNA



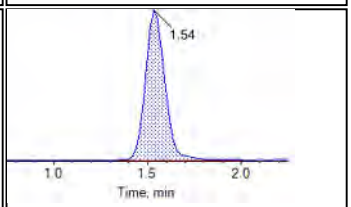
13C6-PFDA



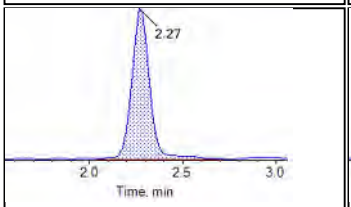
13C7-PFUnA



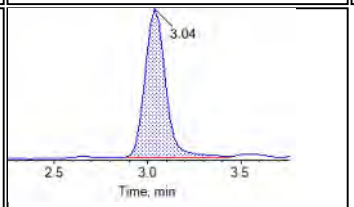
13C2-PFTeDA



13C3-PFBS



13C3-PFHxS



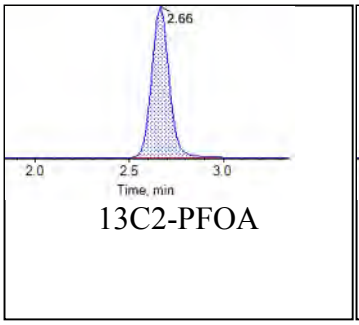
13C8-PFOS

BATTELLE

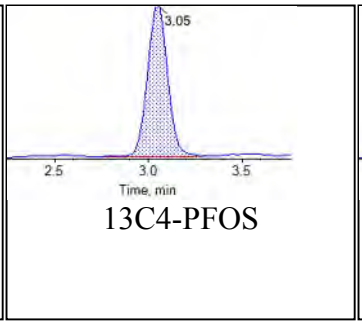
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:19:43 PM

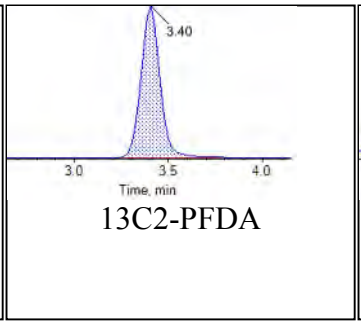
**Internal Standards:**



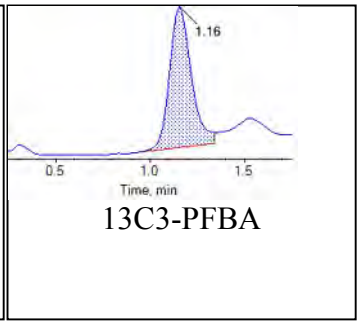

13C2-PFOA




13C4-PFOS




13C2-PFDA




13C3-PFBA

BATTELLE

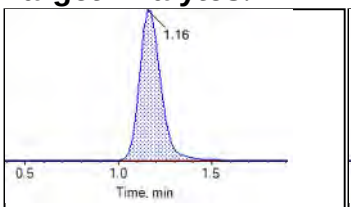
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:19:51 PM

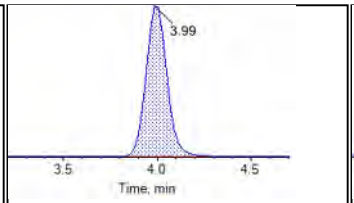
| | | | |
|---|---|---|---|
| **Sample Name** | JY44 | **Injection Vial** | 8 |
| **Sample ID** | L7 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:42:11 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Chromatograms

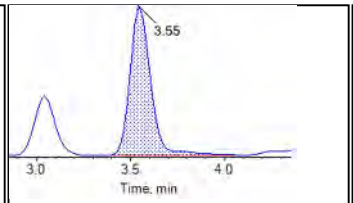
### Target Analytes:



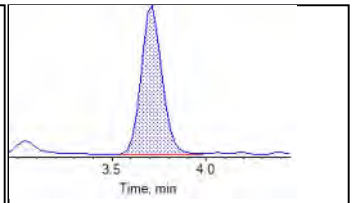
13C4-PFBA



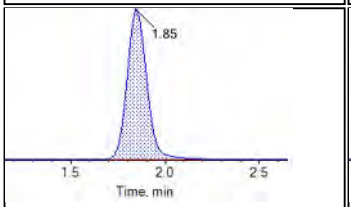
13C2-PFDoA



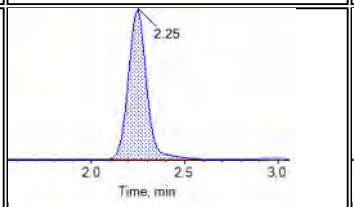
d3-MeFOSAA



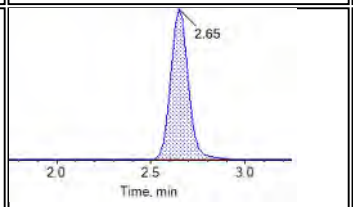
d5-EtFOSAA



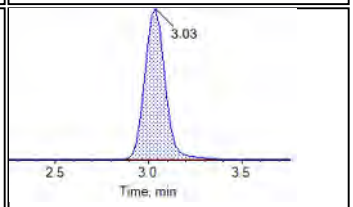
13C5-PFHxA



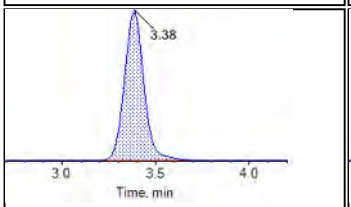
13C4-PFHpA



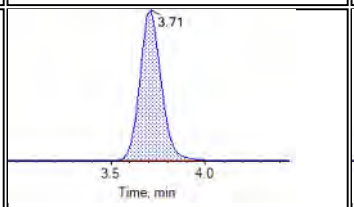
13C8-PFOA



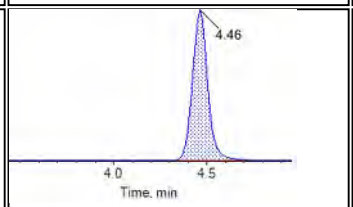
13C9-PFNA



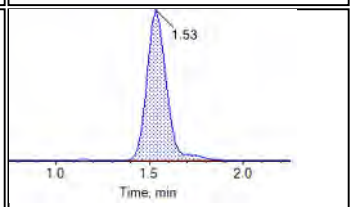
13C6-PFDA



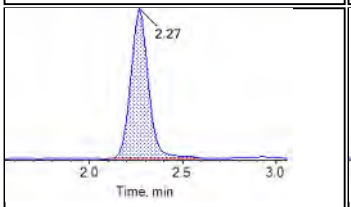
13C7-PFUnA



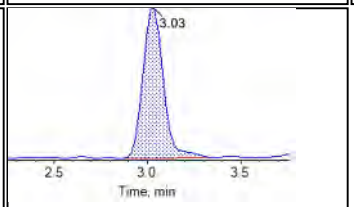
13C2-PFTeDA



13C3-PFBS



13C3-PFHxS



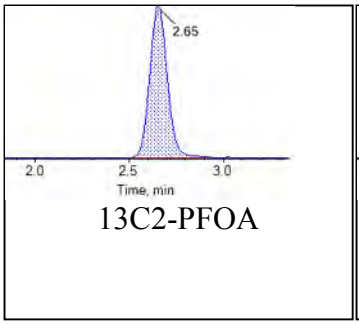
13C8-PFOS

BATTELLE

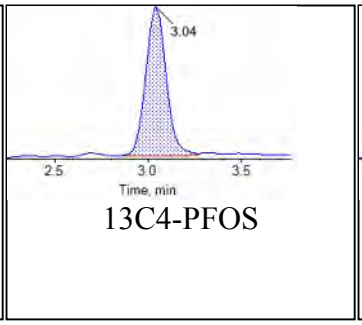
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:19:51 PM

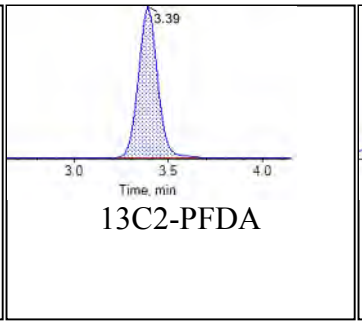
**Internal Standards:**



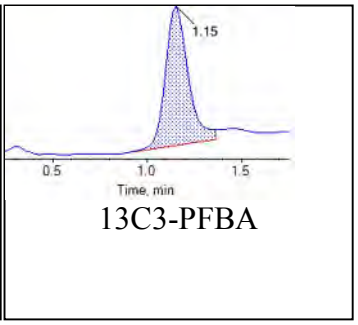
13C2-PFOA



13C4-PFOS



13C2-PFDA



13C3-PFBA

BATTELLE

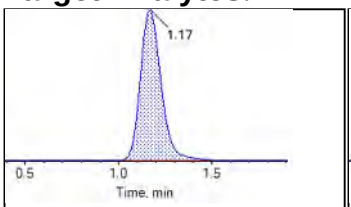
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:20:01 PM

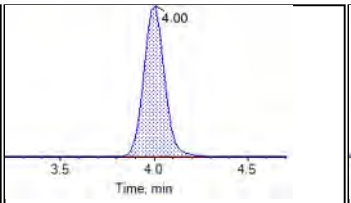
| | | | |
|---|---|---|---|
| **Sample Name** | JY46 IB | **Injection Vial** | 9 |
| **Sample ID** | Instrument Blank | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:53:03 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Chromatograms

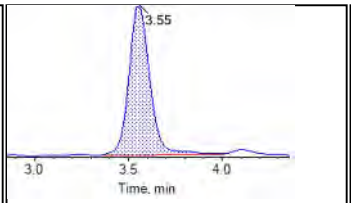
### Target Analytes:



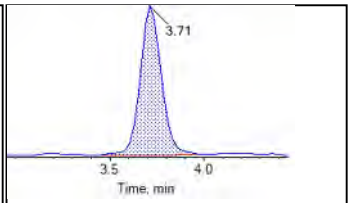
13C4-PFBA



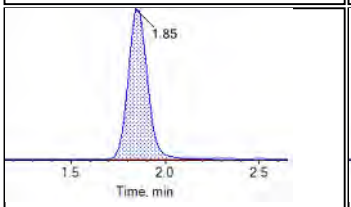
13C2-PFDoA



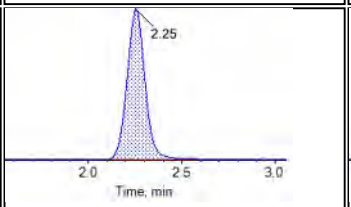
d3-MeFOSAA



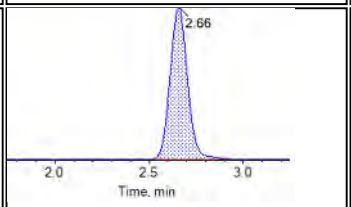
d5-EtFOSAA



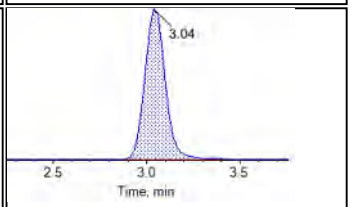
13C5-PFHxA



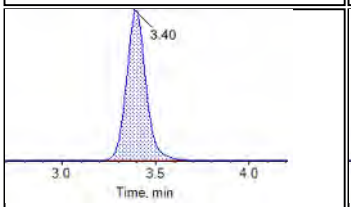
13C4-PFHpA



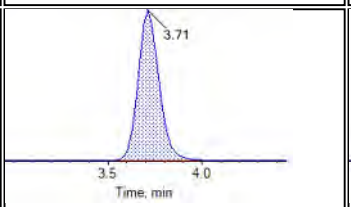
13C8-PFOA



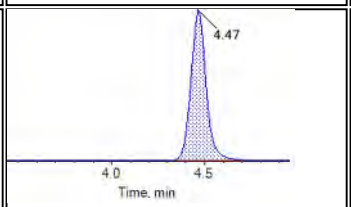
13C9-PFNA



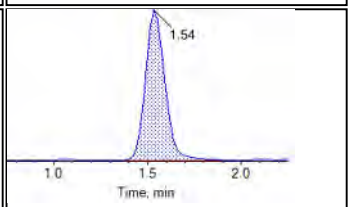
13C6-PFDA



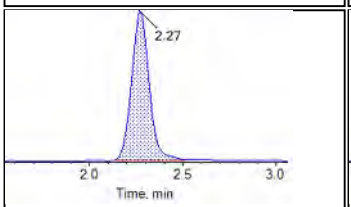
13C7-PFUnA



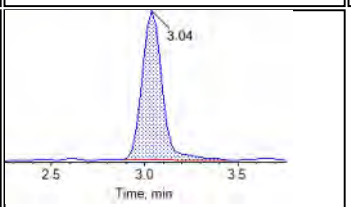
13C2-PFTeDA



13C3-PFBS



13C3-PFHxS



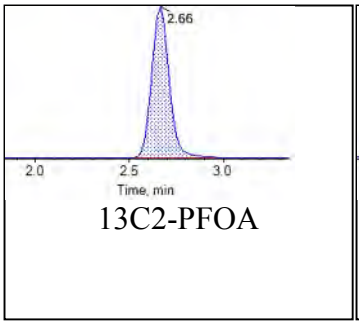
13C8-PFOS

BATTELLE

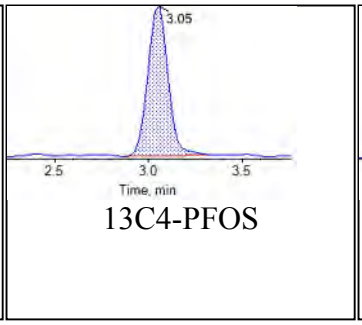
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:20:01 PM

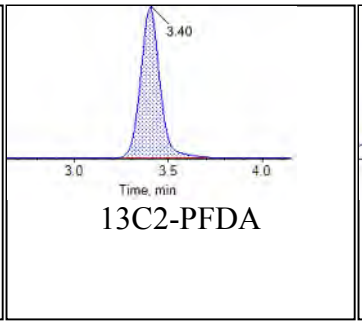
**Internal Standards:**



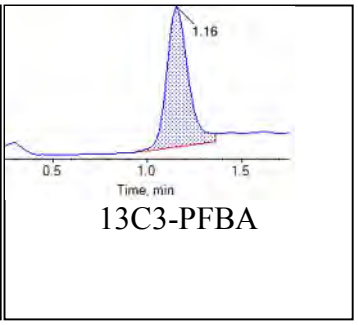

13C2-PFOA




13C4-PFOS




13C2-PFDA




13C3-PFBA

BATTELLE

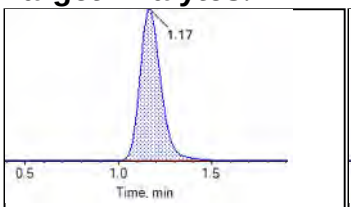
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:20:08 PM

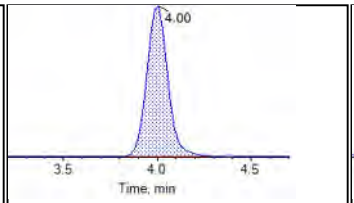
| | | | |
|---|---|---|---|
| **Sample Name** | JY45 ICC | **Injection Vial** | 10 |
| **Sample ID** | ICC | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T00:03:55 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Chromatograms

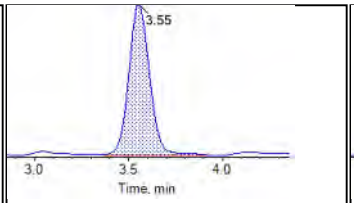
### Target Analytes:



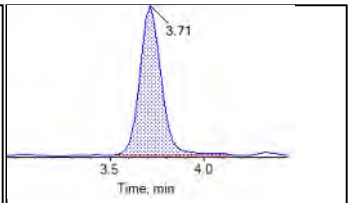
13C4-PFBA



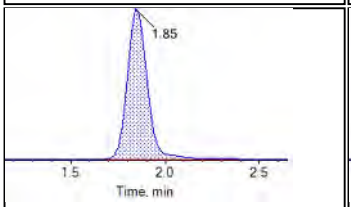
13C2-PFDoA



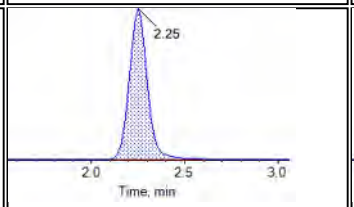
d3-MeFOSAA



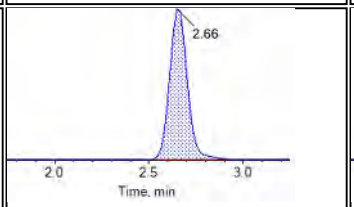
d5-EtFOSAA



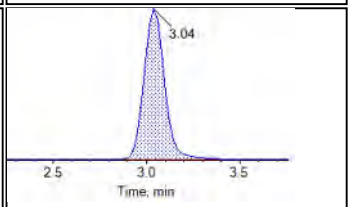
13C5-PFHxA



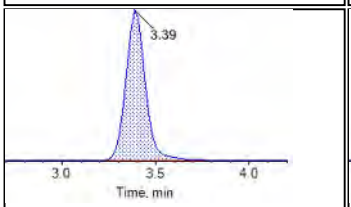
13C4-PFHpA



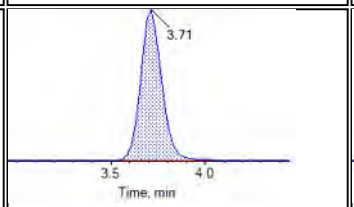
13C8-PFOA



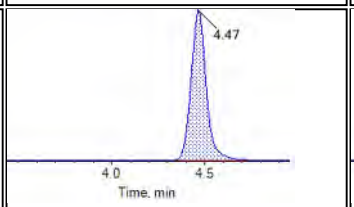
13C9-PFNA



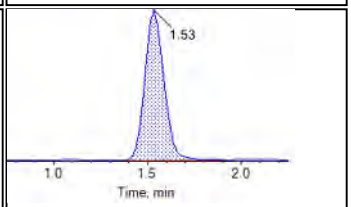
13C6-PFDA



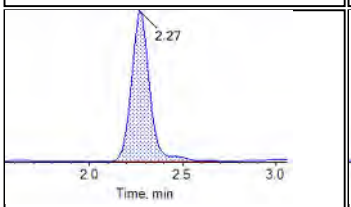
13C7-PFUnA



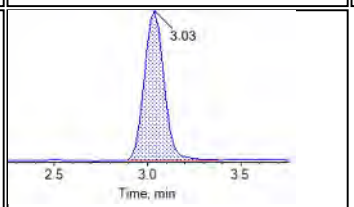
13C2-PFTeDA



13C3-PFBS



13C3-PFHxS



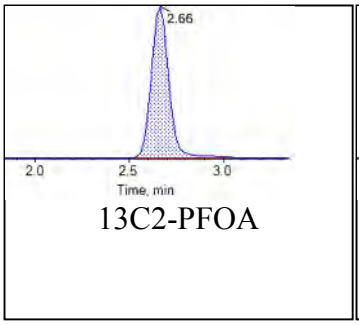
13C8-PFOS

BATTELLE

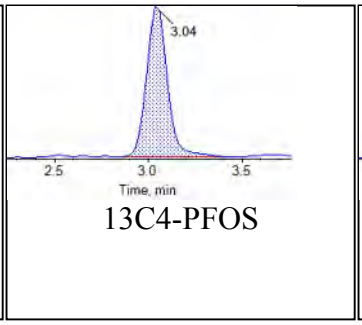
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:20:08 PM

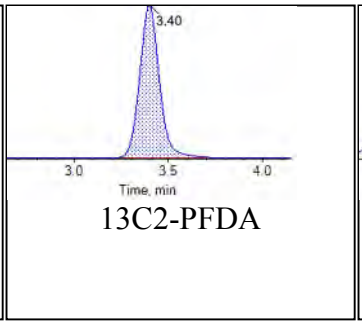
**Internal Standards:**



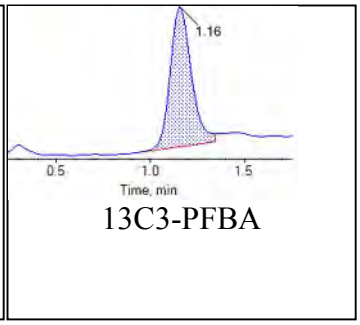

13C2-PFOA




13C4-PFOS




13C2-PFDA




13C3-PFBA

BATTELLE

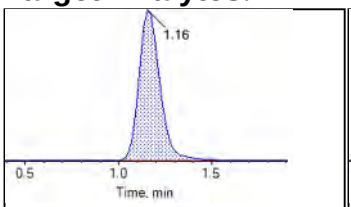
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:20:32 PM

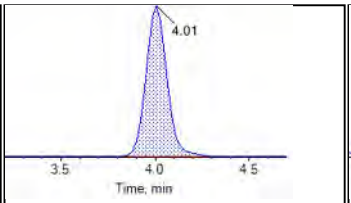
| | | | |
|---|---|---|---|
| **Sample Name** | CR635PB-FS(3) | **Injection Vial** | 15 |
| **Sample ID** | Procedural Blank | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:09:11 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Chromatograms

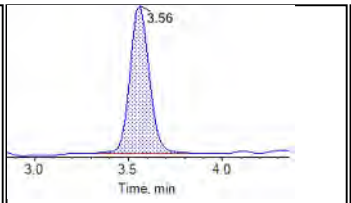
### Target Analytes:



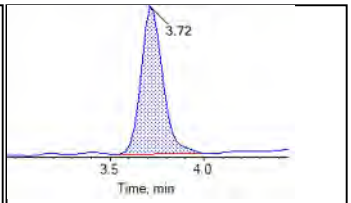
13C4-PFBA



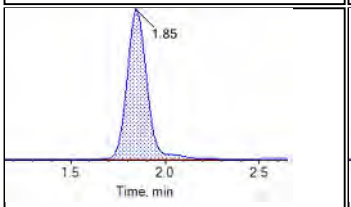
13C2-PFDoA



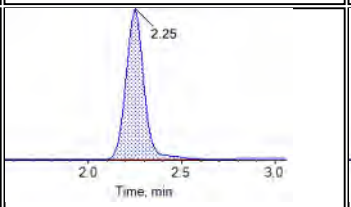
d3-MeFOSAA



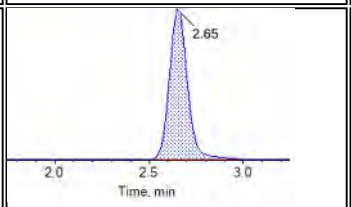
d5-EtFOSAA



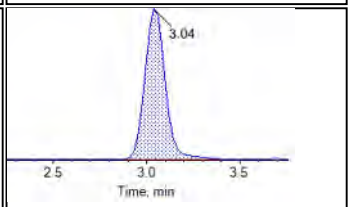
13C5-PFHxA



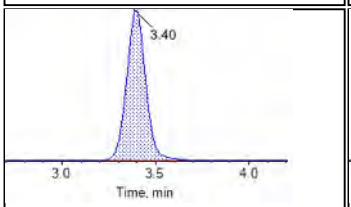
13C4-PFHpA



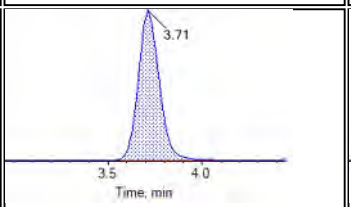
13C8-PFOA



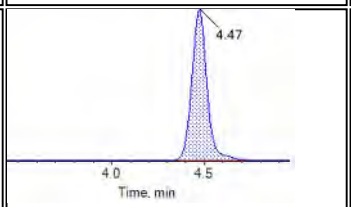
13C9-PFNA



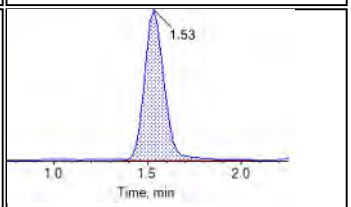
13C6-PFDA



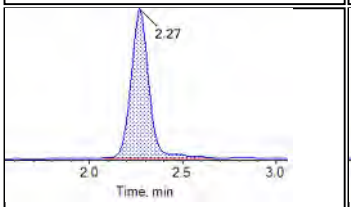
13C7-PFUnA



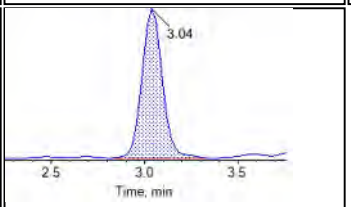
13C2-PFTeDA



13C3-PFBS



13C3-PFHxS



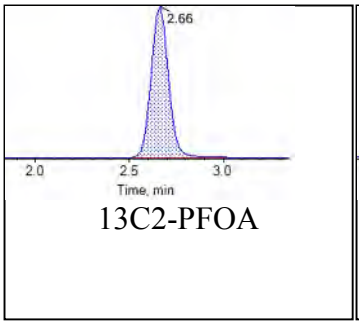
13C8-PFOS

BATTELLE

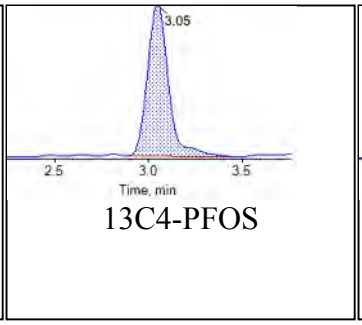
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:20:32 PM

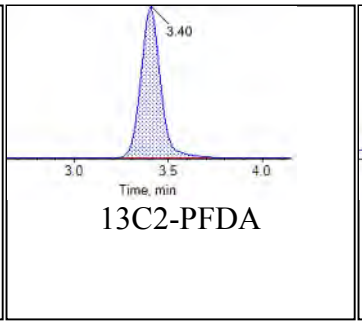
**Internal Standards:**



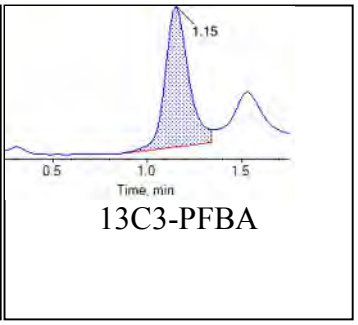

13C2-PFOA




13C4-PFOS




13C2-PFDA




13C3-PFBA

BATTELLE

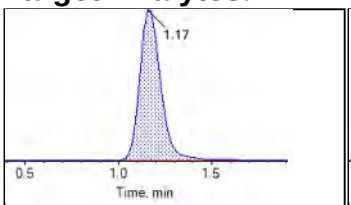
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:20:39 PM

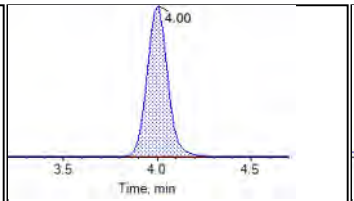
| | | | |
|---|---|---|---|
| **Sample Name** | CR636LCS-FS(3) | **Injection Vial** | 16 |
| **Sample ID** | Laboratory Control Sample | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:20:03 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Chromatograms

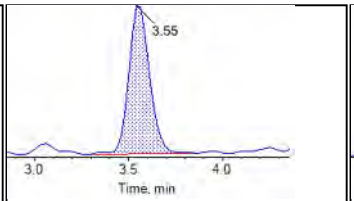
### Target Analytes:



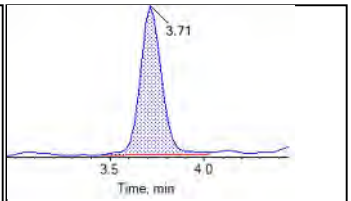
13C4-PFBA



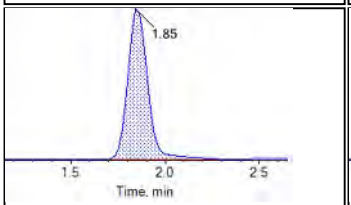
13C2-PFDoA



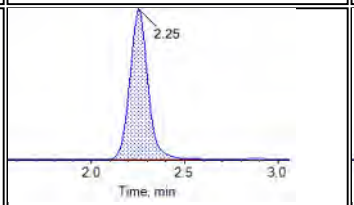
d3-MeFOSAA



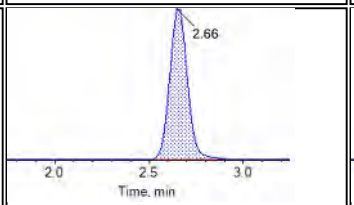
d5-EtFOSAA



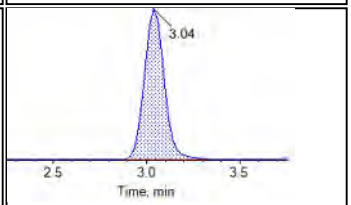
13C5-PFHxA



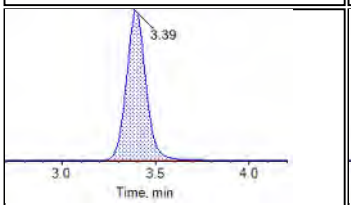
13C4-PFHpA



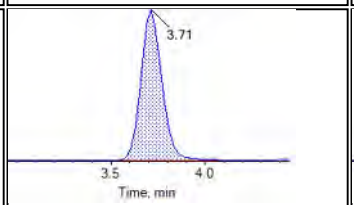
13C8-PFOA



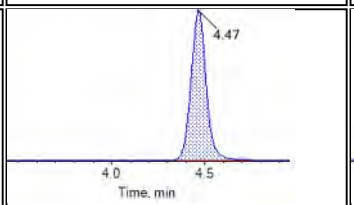
13C9-PFNA



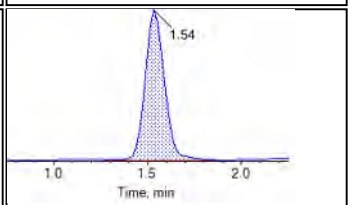
13C6-PFDA



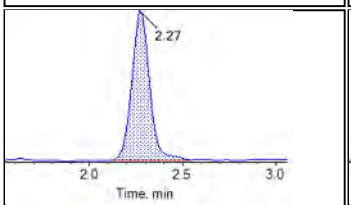
13C7-PFUnA



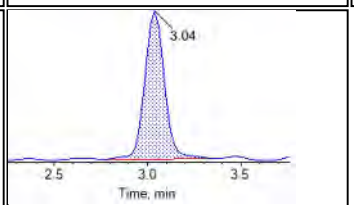
13C2-PFTeDA



13C3-PFBS



13C3-PFHxS

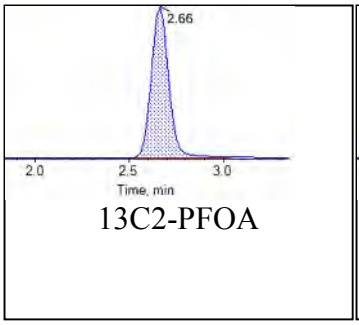


13C8-PFOS

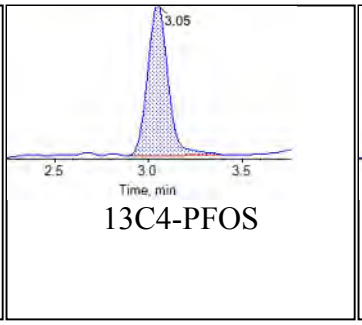
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:20:39 PM

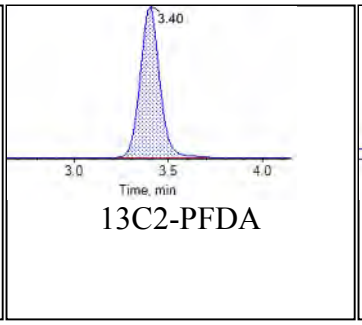
**Internal Standards:**



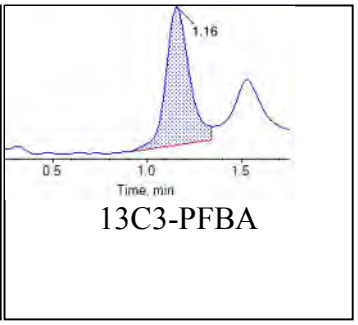

13C2-PFOA




13C4-PFOS




13C2-PFDA




13C3-PFBA

BATTELLE

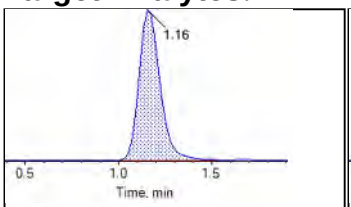
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:20:48 PM

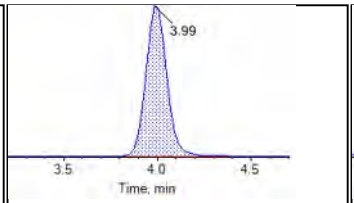
| | | | |
|---|---|---|---|
| **Sample Name** | J7401-FS(3) | **Injection Vial** | 17 |
| **Sample ID** | NASB-BLL15-GW-FB01-080918 | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:30:55 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Chromatograms

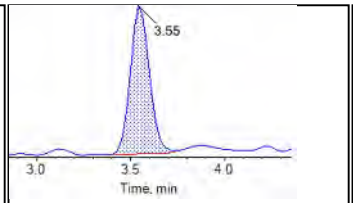
### Target Analytes:



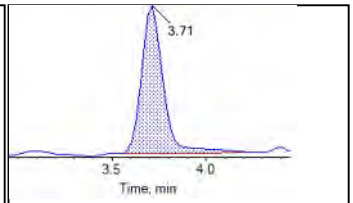
13C4-PFBA



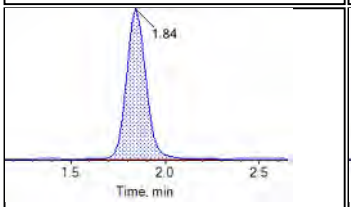
13C2-PFDoA



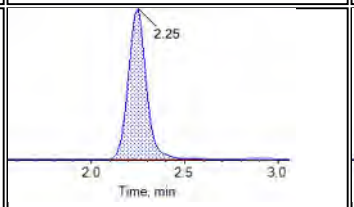
d3-MeFOSAA



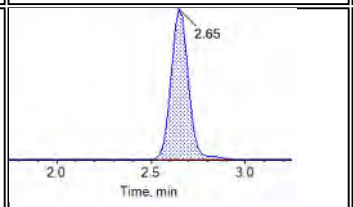
d5-EtFOSAA



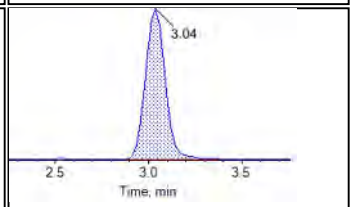
13C5-PFHxA



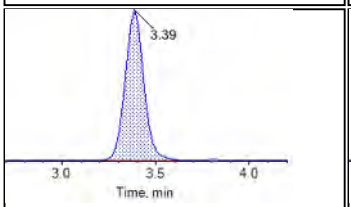
13C4-PFHpA



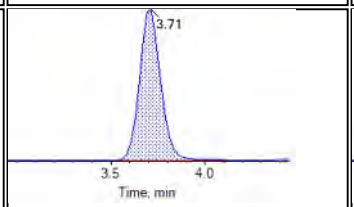
13C8-PFOA



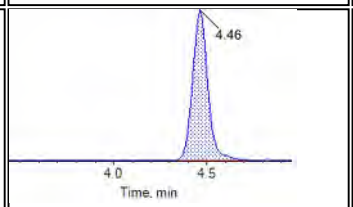
13C9-PFNA



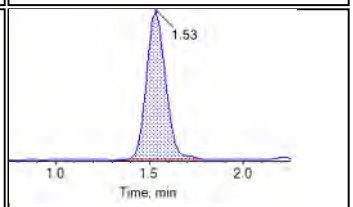
13C6-PFDA



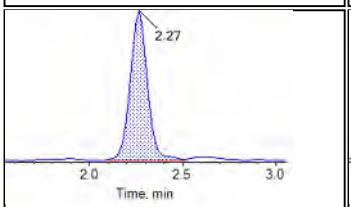
13C7-PFUnA



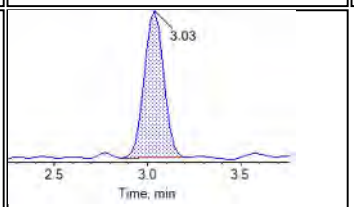
13C2-PFTeDA



13C3-PFBS



13C3-PFHxS



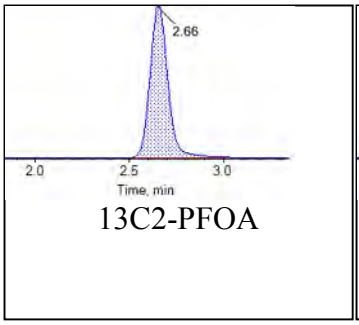
13C8-PFOS

BATTELLE

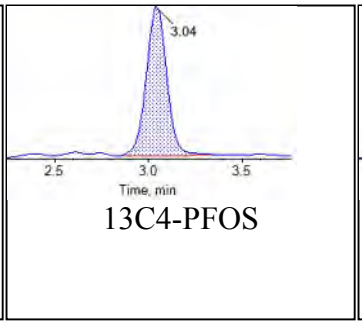
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:20:48 PM

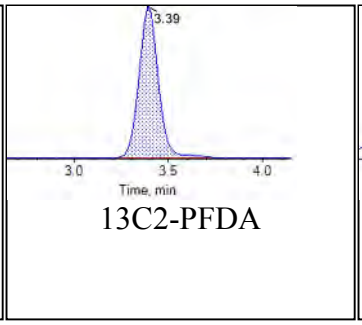
**Internal Standards:**



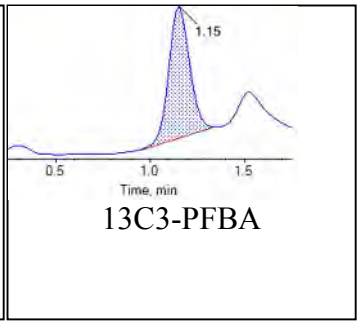

13C2-PFOA




13C4-PFOS




13C2-PFDA




13C3-PFBA

BATTELLE

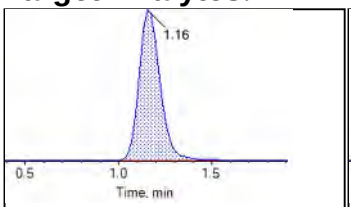
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:20:55 PM

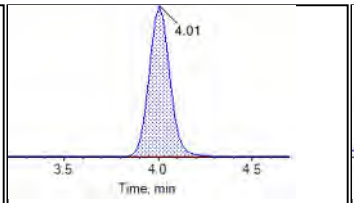
| | | | |
|---|---|---|---|
| **Sample Name** | JY41 CCV | **Injection Vial** | 18 |
| **Sample ID** | CCV | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:41:46 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Chromatograms

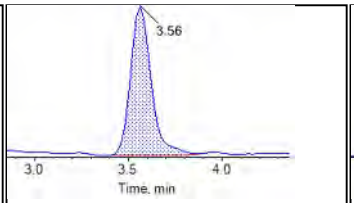
### Target Analytes:



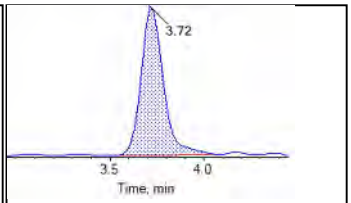
13C4-PFBA



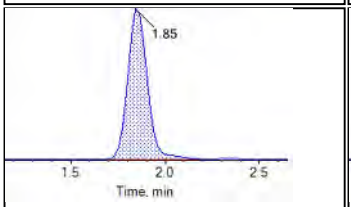
13C2-PFDoA



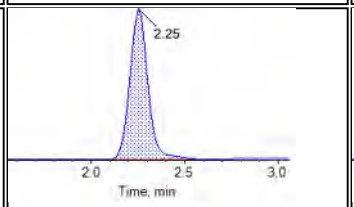
d3-MeFOSAA



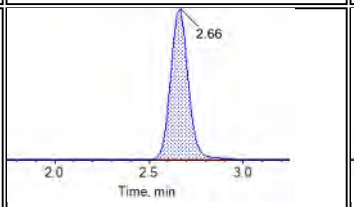
d5-EtFOSAA



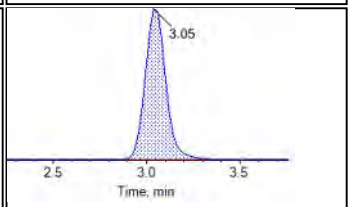
13C5-PFHxA



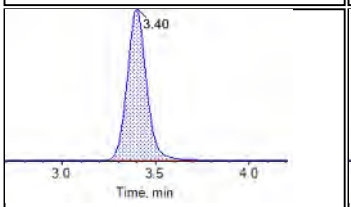
13C4-PFHpA



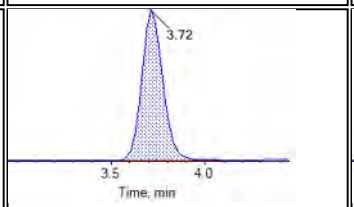
13C8-PFOA



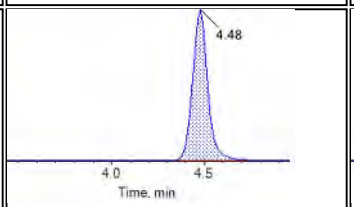
13C9-PFNA



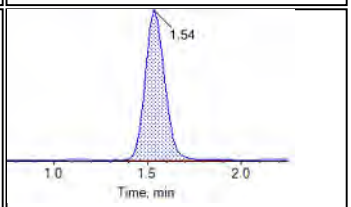
13C6-PFDA



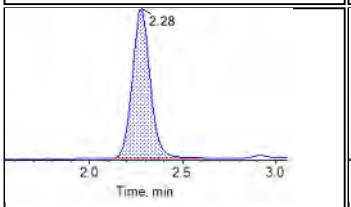
13C7-PFUnA



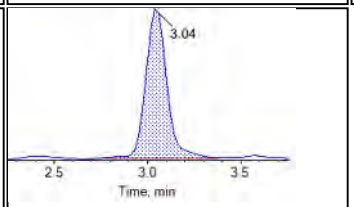
13C2-PFTeDA



13C3-PFBS



13C3-PFHxS



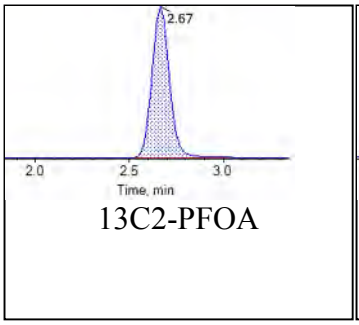
13C8-PFOS

BATTELLE

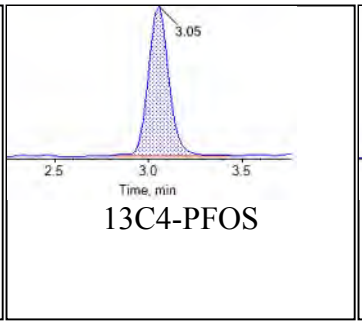
Chromatogram Report

Created with Analyst Reporter
Printed: 29/08/2018 2:20:55 PM

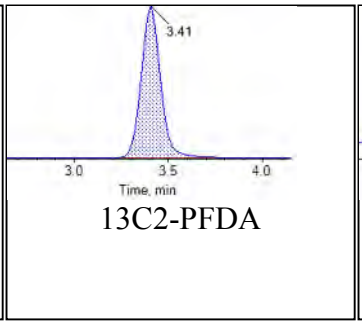
**Internal Standards:**



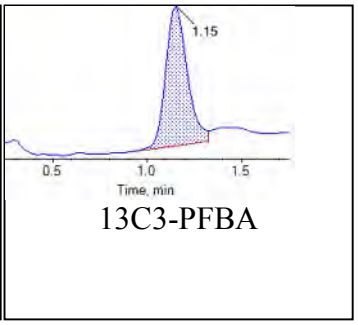

13C2-PFOA




13C4-PFOS




13C2-PFDA




13C3-PFBA

"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","375-22-4","PFBA",".980000","ng/L","J",".14","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500",".50",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","307-24-4","PFHxA",".500000","ng/L","U",".19","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500",".50",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","375-85-9","PFHpA",".500000","ng/L","U",".16","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500",".50",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","335-67-1","PFOA","1.270000","ng/L","J",".18","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500",".50",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","375-95-1","PFNA","1.000000","ng/L","U",".26","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500","1.00",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","335-76-2","PFDA",".500000","ng/L","U",".16","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500",".50",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","2058-94-8","PFUnA","1.000000","ng/L","U",".29","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500","1.00",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","307-55-1","PFDoA",".500000","ng/L","U",".18","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500",".50",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","72629-94-8","PFTrDA",".500000","ng/L","U",".15","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500",".50",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","376-06-7","PFTeDA","1.000000","ng/L","U",".25","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500","1.00",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","2355-31-9","NMeFOSAA","2.000000","ng/L","U",".56","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500","2.00",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","2991-50-6","NEtFOSAA","1.000000","ng/L","U",".49","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500","1.00",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","375-73-5","PFBS",".500000","ng/L","U",".13","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500",".50",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","355-46-4","PFHxS",".400000","ng/L","U",".11","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500",".40",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","1763-23-1","PFOS",".210000","ng/L","J",".19","MDL","","T","","","5.00","LOQ","YES","-99.000000","",".250000",".000500",".50",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","BDO-2105","13C4-PFBA",".340000","ng/L","","-99.00","NA","","SIS","68.00","","-99.00","NA","YES",".500000","",".250000",".000500",".50",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","BDO-2217","13C5-PFHxA",".420000","ng/L","","-99.00","NA","","SIS","84.00","","-99.00","NA","YES",".500000","",".250000",".000500",".50",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","BDO-2218","13C4-PFHpA",".420000","ng/L","","-99.00","NA","","SIS","83.00","","-99.00","NA","YES",".500000","",".250000",".00050

0",".50",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","BDO-2219","13C8-PFOA",".400000","ng/L","","-99.00","NA","","SIS","79.00","","-99.00","NA","YES",".500000","",".250000",".000500",".50",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","BDO-2221","13C9-PFNA",".430000","ng/L","","-99.00","NA","","SIS","85.00","","-99.00","NA","YES",".500000","",".250000",".000500",".50",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","BDO-2222","13C6-PFDA",".410000","ng/L","","-99.00","NA","","SIS","81.00","","-99.00","NA","YES",".500000","",".250000",".000500",".50",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","BDO-2223","13C7-PFUnA",".380000","ng/L","","-99.00","NA","","SIS","76.00","","-99.00","NA","YES",".500000","",".250000",".000500",".50",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","BDO-2112","13C2-PFDoA",".380000","ng/L","","-99.00","NA","","SIS","76.00","","-99.00","NA","YES",".500000","",".250000",".000500",".50",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","BDO-2224","13C2-PFTeDA",".380000","ng/L","","-99.00","NA","","SIS","76.00","","-99.00","NA","YES",".500000","",".250000",".000500",".50",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","BDO-1838","d3-MeFOSAA",".390000","ng/L","","-99.00","NA","","SIS","79.00","","-99.00","NA","YES",".500000","",".250000",".000500",".50",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","BDO-1839","d5-EtFOSAA",".390000","ng/L","","-99.00","NA","","SIS","79.00","","-99.00","NA","YES",".500000","",".250000",".000500",".50",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","BDO-2226","13C3-PFBS",".410000","ng/L","","-99.00","NA","","SIS","88.00","","-99.00","NA","YES",".470000","",".250000",".000500",".50",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","BDO-2227","13C3-PFHxS",".410000","ng/L","","-99.00","NA","","SIS","88.00","","-99.00","NA","YES",".470000","",".250000",".000500",".50",""
"CR635PB-FS","SOP 5-369","Initial","CR635PB-FS","BNO","BDO-2228","13C8-PFOS",".410000","ng/L","","-99.00","NA","","SIS","86.00","","-99.00","NA","YES",".480000","",".250000",".000500",".50",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","375-22-4","PFBA","12.360000","ng/L","",".14","MDL","","T","124.00","","5.00","LOQ","YES","10.000000","",".250000",".000500",".50",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","307-24-4","PFHxA","10.450000","ng/L","",".19","MDL","","T","103.00","","5.00","LOQ","YES","10.100000","",".250000",".000500",".50",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","375-85-9","PFHpA","10.260000","ng/L","",".16","MDL","","T","103.00","","5.00","LOQ","YES","10.000000","",".250000",".000500",".50",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","335-67-1","PFOA","11.430000","ng/L","B",".18","MDL","","T","114.00","","5.00","LOQ","YES","10.000000","",".250000",".000500",".50",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","375-95-1","PFNA","10.840000","ng/L","",".26","MDL","","T","108.00","","5.00","LOQ","YES","10.000000","",".250000",".000500","1.00",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","335-76-2","PFDA","10.350000","ng/L","",".16","MDL","","T","104.00","","5.00","LOQ","YES","10.000000","",".250000",".000500",".50",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","2058-94-8","PFUnA","9.540000","ng/L","",".29","MDL","","T","95.00","","5.00","LOQ","YES","10.000000","",".250000",".00

0500","1.00",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","307-55-1","PFDoA","10.870000","ng/L","",".18","MDL","","T","109.00","","5.00","LOQ","YES","10.000000","",".250000",".000500",".50",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","72629-94-8","PFTrDA","11.830000","ng/L","",".15","MDL","","T","118.00","","5.00","LOQ","YES","10.000000","",".250000",".000500",".50",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","376-06-7","PFTeDA","11.140000","ng/L","",".25","MDL","","T","111.00","","5.00","LOQ","YES","10.000000","",".250000",".000500","1.00",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","2355-31-9","NMeFOSAA","11.810000","ng/L","",".56","MDL","","T","118.00","","5.00","LOQ","YES","10.000000","",".250000",".000500","2.00",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","2991-50-6","NEtFOSAA","11.310000","ng/L","",".49","MDL","","T","113.00","","5.00","LOQ","YES","10.000000","",".250000",".000500","1.00",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","375-73-5","PFBS","10.380000","ng/L","",".13","MDL","","T","103.00","","5.00","LOQ","YES","10.100000","",".250000",".000500",".50",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","355-46-4","PFHxS","10.500000","ng/L","",".11","MDL","","T","104.00","","5.00","LOQ","YES","10.100000","",".250000",".000500",".40",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","1763-23-1","PFOS","10.760000","ng/L","",".19","MDL","","T","108.00","","5.00","LOQ","YES","10.000000","",".250000",".000500",".50",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","BDO-2105","13C4-PFBA",".380000","ng/L","","-99.00","NA","","SIS","75.00","","-99.00","NA","YES",".500000","",".250000",".000500",".50",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","BDO-2217","13C5-PFHxA",".420000","ng/L","","-99.00","NA","","SIS","85.00","","-99.00","NA","YES",".500000","",".250000",".000500",".50",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","BDO-2218","13C4-PFHpA",".470000","ng/L","","-99.00","NA","","SIS","94.00","","-99.00","NA","YES",".500000","",".250000",".000500",".50",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","BDO-2219","13C8-PFOA",".440000","ng/L","","-99.00","NA","","SIS","88.00","","-99.00","NA","YES",".500000","",".250000",".000500",".50",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","BDO-2221","13C9-PFNA",".430000","ng/L","","-99.00","NA","","SIS","87.00","","-99.00","NA","YES",".500000","",".250000",".000500",".50",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","BDO-2222","13C6-PFDA",".420000","ng/L","","-99.00","NA","","SIS","84.00","","-99.00","NA","YES",".500000","",".250000",".000500",".50",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","BDO-2223","13C7-PFUnA",".430000","ng/L","","-99.00","NA","","SIS","86.00","","-99.00","NA","YES",".500000","",".250000",".000500",".50",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","BDO-2112","13C2-PFDoA",".420000","ng/L","","-99.00","NA","","SIS","83.00","","-99.00","NA","YES",".500000","",".250000",".000500",".50",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","BDO-2224","13C2-PFTeDA",".390000","ng/L","","-99.00","NA","","SIS","78.00","","-99.00","NA","YES",".500000","",".250000",".000500",".50",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","BDO-1838","d3-MeFOSAA",".460000","ng/L","","-99.00","NA","","SIS","92.00","","-99.00","NA","YES",".500000","",".250000",".00

0500",".50",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","BDO-1839","d5-EtFOSAA",".410000","ng/L","","-99.00","NA","","SIS","82.00","","-99.00","NA","YES",".500000","",".250000",".000500",".50",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","BDO-2226","13C3-PFBS",".440000","ng/L","","-99.00","NA","","SIS","95.00","","-99.00","NA","YES",".470000","",".250000",".000500",".50",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","BDO-2227","13C3-PFHxS",".440000","ng/L","","-99.00","NA","","SIS","92.00","","-99.00","NA","YES",".470000","",".250000",".000500",".50",""
"CR636LCS-FS","SOP 5-369","Initial","CR636LCS-FS","BNO","BDO-2228","13C8-PFOS",".440000","ng/L","","-99.00","NA","","SIS","92.00","","-99.00","NA","YES",".480000","",".250000",".000500",".50",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","375-22-4","PFBA","2.310000","ng/L","J",".13","MDL","","T","","","4.72","LOQ","YES","-99.000000","",".265000",".000500",".47",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","307-24-4","PFHxA",".470000","ng/L","U",".18","MDL","","T","","","4.72","LOQ","YES","-99.000000","",".265000",".000500",".47",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","375-85-9","PFHpA",".470000","ng/L","U",".15","MDL","","T","","","4.72","LOQ","YES","-99.000000","",".265000",".000500",".47",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","335-67-1","PFOA","1.280000","ng/L","J",".17","MDL","","T","","","4.72","LOQ","YES","-99.000000","",".265000",".000500",".47",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","375-95-1","PFNA",".940000","ng/L","U",".25","MDL","","T","","","4.72","LOQ","YES","-99.000000","",".265000",".000500",".94",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","335-76-2","PFDA",".470000","ng/L","U",".15","MDL","","T","","","4.72","LOQ","YES","-99.000000","",".265000",".000500",".47",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","2058-94-8","PFUnA",".940000","ng/L","U",".27","MDL","","T","","","4.72","LOQ","YES","-99.000000","",".265000",".000500",".94",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","307-55-1","PFDoA",".470000","ng/L","U",".17","MDL","","T","","","4.72","LOQ","YES","-99.000000","",".265000",".000500",".47",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","72629-94-8","PFTrDA",".470000","ng/L","U",".14","MDL","","T","","","4.72","LOQ","YES","-99.000000","",".265000",".000500",".47",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","376-06-7","PFTeDA",".940000","ng/L","U",".24","MDL","","T","","","4.72","LOQ","YES","-99.000000","",".265000",".000500",".94",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","2355-31-9","NMeFOSAA","1.890000","ng/L","U",".53","MDL","","T","","","4.72","LOQ","YES","-99.000000","",".265000",".000500","1.89",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","2991-50-6","NEtFOSAA",".940000","ng/L","U",".46","MDL","","T","","","4.72","LOQ","YES","-99.000000","",".265000",".000500",".94",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","375-73-5","PFBS",".470000","ng/L","U",".12","MDL","","T","","","4.72","LOQ","YES","-99.000000","",".265000",".000500",".47",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","355-46-4","PFHxS",".380000","ng/L","U",".10","MDL","","T","","","4.72","LOQ","YES","-99.000000","",".265000",".000500

",".38",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","1763-23-1","PFOS",".470000","ng/L","U",".18","MDL","","T","","","4.72","LOQ","YES","-99.000000","",".265000",".000500",".47",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","BDO-2105","13C4-PFBA",".250000","ng/L","","-99.00","NA","","SIS","53.00","","-99.00","NA","YES",".470000","",".265000",".000500",".50",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","BDO-2217","13C5-PFHxA",".250000","ng/L","","-99.00","NA","","SIS","52.00","","-99.00","NA","YES",".470000","",".265000",".000500",".50",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","BDO-2218","13C4-PFHpA",".260000","ng/L","","-99.00","NA","","SIS","54.00","","-99.00","NA","YES",".470000","",".265000",".000500",".50",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","BDO-2219","13C8-PFOA",".260000","ng/L","","-99.00","NA","","SIS","56.00","","-99.00","NA","YES",".470000","",".265000",".000500",".50",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","BDO-2221","13C9-PFNA",".240000","ng/L","","-99.00","NA","","SIS","51.00","","-99.00","NA","YES",".470000","",".265000",".000500",".50",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","BDO-2222","13C6-PFDA",".280000","ng/L","","-99.00","NA","","SIS","59.00","","-99.00","NA","YES",".470000","",".265000",".000500",".50",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","BDO-2223","13C7-PFUnA",".270000","ng/L","","-99.00","NA","","SIS","57.00","","-99.00","NA","YES",".470000","",".265000",".000500",".50",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","BDO-2112","13C2-PFDoA",".260000","ng/L","","-99.00","NA","","SIS","54.00","","-99.00","NA","YES",".470000","",".265000",".000500",".50",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","BDO-2224","13C2-PFTeDA",".240000","ng/L","","-99.00","NA","","SIS","51.00","","-99.00","NA","YES",".470000","",".265000",".000500",".50",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","BDO-1838","d3-MeFOSAA",".250000","ng/L","","-99.00","NA","","SIS","52.00","","-99.00","NA","YES",".470000","",".265000",".000500",".50",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","BDO-1839","d5-EtFOSAA",".260000","ng/L","","-99.00","NA","","SIS","55.00","","-99.00","NA","YES",".470000","",".265000",".000500",".50",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","BDO-2226","13C3-PFBS",".250000","ng/L","","-99.00","NA","","SIS","57.00","","-99.00","NA","YES",".440000","",".265000",".000500",".50",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","BDO-2227","13C3-PFHxS",".260000","ng/L","","-99.00","NA","","SIS","57.00","","-99.00","NA","YES",".450000","",".265000",".000500",".50",""
"NASB-BLL15-GW-FB01-080918","SOP 5-369","Initial","J7401-FS","BNO","BDO-2228","13C8-PFOS",".270000","ng/L","","-99.00","NA","","SIS","59.00","","-99.00","NA","YES",".450000","",".265000",".000500",".50",""
"112G08005-we21.PT.LT","CTO WE21, Former Naval Air Station Brunswick","CR635PB-FS","","WATER","CR635PB-FS","MB","","-99.000000","SOP 5-369","Gen Prep","Initial","08/22/2018 14:47","08/25/2018 01:09","BNO","COA","NA","T","2.000","NA","NA","","100.000000","18-0520","18-0520","DP-18-0234","DP-18-0234","18-0520","08/22/2018 14:47","08/30/2018 23:12",""
"112G08005-we21.PT.LT","CTO WE21, Former Naval Air Station Brunswick","CR636LCS-FS","","WATER","CR636LCS-FS","LCS","","-99.000000","SOP 5-369","Gen Prep","Initial","08/22/2018 14:47","08/25/2018 01:20","BNO","COA","NA","T","2.000","NA","NA","","100.000000","18-0520","18-0520","DP-18-0234","DP-18-0234","18-0520","08/22/2018 14:47","08/30/2018 23:12",""

"112G08005-we21.PT.LT","CTO WE21, Former Naval Air Station Brunswick","NASB-BLL15-GW-FB01-080918","08/09/2018 14:00","QC","J7401-FS","NM","SHP-180810-03",".900000","SOP 5-369","Gen Prep","Initial","08/22/2018 14:47","08/25/2018 01:30","BNO","COA","NA","T","2.000","NA","NA","","100.000000","18-0520","18-0520","DP-18-0234","DP-18-0234","18-0520","08/10/2018 10:30","08/30/2018 23:12",""

TETRA TECH **INTERNAL CORRESPONDENCE**

**TO:** **J. ORIENT** **DATE:** **SEPTEMBER 13, 2018**

**FROM:** **TERRI L. SOLOMON** **COPIES:** **DV FILE**

**SUBJECT:** **ORGANIC DATA VALIDATION – POLYFLUOROALKYL SUBSTANCES (PFAS)**
**FORMER NAVAL AIR STATION (NAS) BRUNSWICK, BRUNSWICK, ME**
**CTO WE21**
**SAMPLE DELIVERY GROUPS (SDGs) 18-0500; 18-0520**

**SAMPLES:** SDG 18-0500

7/Groundwater
NASB-BLL15-DUP-080918
NASB-BLL15-GW-01-0818
NASB-BLL15-GW-02-0818
NASB-BLL15-GW-03-0818
NASB-BLL15-GW-04-0818
NASB-CCC-GW-01-0818
NASB-CCC-GW-02-0818

1/Rinse Blank
NASB-BLL15-GW-RB01-080918

SDG 18-0520

1/ Field Blank
NASB-BLL15-GW-FB01-080918

Overview

The sample set for former NAS Brunswick, SDGs 18-0500 and 18-0520 consisted of seven (7) aqueous environmental samples, one (1) rinse blank and one (1) field blank. All aqueous samples were analyzed for Polyfluoroalkyl Substances (PFAS) including pentadecafluorooctanoic acid (PFOA), perfluorobutane sulfonic acid (PFBS), perfluoroheptanoic acid (PFHpA), perfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA), perfluorooctane sulfonic acid (PFOS), N-ethylperfluorooctane sulfonamidoacetate (NEFOSA), N-methylperfluorooctane sulfonamidoacetate (NMFOSA), perfluorodecanoic acid (PFDA), perfluorododecanoic acid (PFDoA), perfluorohexanoic acid (PFHxA), perfluorotetradecanoic acid (PFTeDA), perfluorotridecanoic acid (PFTrDA), perfluoroundecanoic acid (PFUnA) and perfluorobutanoic acid (PFBA). One (1) field duplicate pair, NASB-BLL15-GW-01-0818 / NASB-BLL15-DUP-080918 was included in this SDG.

The samples were collected by Tetra Tech, Inc. on August 8 and 9, 2018 and analyzed by Battelle Norwell Operations. The analyses were conducted using EPA Method 537 (Modified) analytical and reporting protocols. The data was evaluated based on the following parameters:

* • Data completeness
* • Hold times/Sample Preservation
* • Mass Calibration
* • LC/MS/MS System Tuning and Performance
* • Mass Spectral Acquisition Rate

| | | |
|---|---|---|
| * | • | Instrument Sensitivity Check |
| * | • | Ion Transition Check |
| * | • | Initial/Continuing Calibrations |
| | • | Laboratory Instrument/Method/Field Blank Results |
| | • | Extraction Internal Standard (Surrogate) Recoveries |
| | • | Injection Internal Standard Recoveries |
| * | • | Laboratory Control Sample Recoveries |
| * | • | Matrix Spike / Matrix Spike Duplicate Recoveries |
| * | • | Field Duplicate Precision |
| * | • | Compound Identification |
| * | • | Compound Quantitation |
| * | • | Detection Limits |

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B, and Appendix C contains the documentation to support the findings as discussed in this data validation report. An EPA Region 1 tier II validation at Stage 4 was performed on the data in these SDGs. The text of this report has been formulated to address only those areas affecting data quality.

**PFAS**

The following compounds were detected (< ½ LOQ) in the laboratory method/field blanks at concentrations below the Limit of Quantitation (LOQ).

| Analyte | Maximum Concentration (ng/L) | Action Level LOQ > or < |
|---|---|---|
| PFHxA(1) | 1.89 | < LOQ |
| PFOA(2) | 1.38 | < LOQ |
| PFHpA(2) | 0.63 | < LOQ |
| PFHxS(2) | 0.27 | < LOQ |
| PFOS(2) | 1.03 | < LOQ |
| PFBA(3) | 2.31 | < LOQ |

(1) – Maximum concentration detected in the laboratory method blank affecting all samples except NASB-BLL15-GW-FB01-080918.
(2) – Maximum concentration detected in the rinse blank.
(3) – Maximum concentration detected in the field blank.

The detected results reported below the LOQ in the affected samples were qualified as non-detected, (U). Field blanks are not qualified for blank contamination

The extraction internal standard (surrogate) recoveries for 13C4-PFBA and 13C2-PFTeDA were below the 50% quality control limit for samples NASB-BLL15-GW-01-0818, NASB-BLL15-DUP-080918, NASB-BLL15-GW-03-0818 and NASB-BLL15-GW-04-0818. The laboratory reanalyzed the samples with similar results. The original samples were used for validation. The compounds PFBA, PFTeDA and PFTrDA were affected. The detected and nondetected results reported for the affected compounds were qualified as estimated with a low bias (J-) and (UJ), respectively.

Samples NASB-BLL15-GW-01-0818, NASB-BLL15-DUP-080918, NASB-BLL15-GW-01-0818 matrix spike and NASB-BLL-GW-01-0818 matrix spike duplicate had surrogate recoveries for 13C4-PFBA less than 10%. The laboratory did not re-prepare the field duplicate pair referenced above. Because sample NASB-BLL15-

GW-01-0818 is the sample basis for the duplicate and quality control samples, the issue of low recoveries were confirmed in all four sample analyses.

The injection internal standard compound 13C3-PFBA had peak areas above the 150% quality control limit for samples NASB-BLL15-GW-01-0818, NASB-BLL15-DUP-080918 and NASB-BLL15-GW-04-0818. The laboratory reanalyzed the samples with similar results. The injection standard 13C3-PFBA is only used to quantify the extraction internal standard 13C4-PFBA which is used to quantify PFBA. The original samples were used for validation. The detected results reported for PFBA in the affected samples were qualified as estimated with a low bias (J-).

**NOTES**

It was noted in the case narrative that the original analysis sequence for SDG 18-0500 had an instrument error that lead to a retention time shift on 08/21/2018. All samples were reanalyzed on 08/25/2018.

The laboratory uses a primary transition for the quantitation of each analyte and a secondary transition for confirmation.

All samples were analyzed at a 2X dilution including field blanks and laboratory quality control samples.

Detected results reported below the LOQ but above the Detection Limit (DL) were qualified as estimated, (J).

Non-detected results are reported to limit of detection (LOD).

The injection internal standard compounds 13C3-PFBA, 13C2-PFOA, 13C2-PFDA and 13C4-PFOS had peak areas below the 50% quality control limit for sample NASB-CCC-GW-01-0818. The laboratory reanalyzed the sample with passing results. The reanalysis was used for validation. No validation actions were required.

Samples NASB-BLL15-GW-03-0818 and NASB-BLL15-GW-04-0818 were not re-prepared by the lab but were re-analyzed. No further action was taken by the reviewer.

**EXECUTIVE SUMMARY**

**Laboratory Performance:** Contaminants were detected in the laboratory method/field blanks. Two extraction internal standard recoveries were below the quality control limits for several samples. One injection internal standard compound area was above the quality control limits for several samples.

**Other Factors Affecting Data Quality:** Detected results below the LOQ were estimated.

The data for these analyses were reviewed with reference to the EPA New England Environmental Data Review Supplement for Regional Data Review Elements Superfund Guidance/Procedures (April 2013), National Functional Guidelines for Organic Data Validation (January 2017), and the Department of Defense (DoD) document entitled, “Quality Systems Manual (QSM) for Environmental Laboratories” (July 2013). The text of this report has been formulated to address only those areas affecting data quality.

Terri L Solomon

_____

Tetra Tech, Inc.
Terri L. Solomon
Environmental Chemist

Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:

Appendix A - Qualified Analytical Results
Appendix B - Results as reported by the Laboratory
Appendix C - Support Documentation

## Data Qualifier Definitions

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

| | |
|---|---|
| **U** | The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted detection limit. |
| **J** | The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit). |
| **J+** | The result is an estimated quantity, but the result may be biased high. |
| **J-** | The result is an estimated quantity, but the result may be biased low. |
| **UJ** | The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise. |
| **NJ** | The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value is the estimated concentration in the sample. |
| **R** | The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample. |
| **UR** | The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample. |
| **X** | The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team, but exclusion of the data is recommended. |

**Appendix A**

Qualified Analytical Results

**Qualifier Codes:**

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's r < 0.995
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate
Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

| **PROJ_NO: 08005-WE21** | NSAMPLE | NASB-BLL15-DUP-080918 | | | NASB-BLL15-GW-01-0818 | | | NASB-BLL15-GW-02-0818 | | | NASB-BLL15-GW-03-0818 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SDG: 18-0500** | LAB_ID | J7398-FS | | | J7397-FS | | | J7396-FS | | | J7399-FS | | |
| **FRACTION: PFAS** | SAMP_DATE | 8/9/2018 | | | 8/9/2018 | | | 8/9/2018 | | | 8/9/2018 | | |
| **MEDIA: WATER** | QC_TYPE | NM | | | NM | | | NM | | | NM | | |
| | UNITS | NG/L | | | NG/L | | | NG/L | | | NG/L | | |
| | PCT_SOLIDS | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | | |
| | DUP_OF | NASB-BLL15-GW-01-0818 | | | | | | | | | | | |
| PARAMETER | | RESULT | VQL | QLCD | RESULT | VQL | QLCD | RESULT | VQL | QLCD | RESULT | VQL | QLCD |
| N-ETHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NEFOSA) | | 0.91 | U | | 0.96 | U | | 0.93 | U | | 0.94 | U | |
| N-METHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NMFOSA) | | 1.82 | U | | 1.92 | U | | 1.85 | U | | 1.89 | U | |
| PENTADECAFLUOROOCTANOIC ACID (PFOA) | | 7.41 | | | 6.81 | | | 7.86 | | | 8.52 | | |
| PERFLUOROBUTANESULFONIC ACID (PFBS) | | 3.04 | J | P | 3.1 | J | P | 2.26 | J | P | 1.8 | J | P |
| PERFLUOROBUTANOIC ACID (PFBA) | | 43.74 | J- | NR | 57.74 | J- | NR | 0.46 | U | | 0.47 | UJ | R |
| PERFLUORODECANOIC ACID (PFDA) | | 0.45 | U | | 0.48 | U | | 0.46 | U | | 0.47 | U | |
| PERFLUORODODECANOIC ACID (PFDOA) | | 0.45 | U | | 0.48 | U | | 0.46 | U | | 0.47 | U | |
| PERFLUOROHEPTANOIC ACID (PFHPA) | | 2.09 | U | B | 1.9 | U | B | 1.99 | U | B | 2.5 | U | B |
| PERFLUOROHEXANESULFONIC ACID (PFHXS) | | 14.22 | | | 12.63 | | | 11.26 | | | 10.73 | | |
| PERFLUOROHEXANOIC ACID (PFHXA) | | 4.16 | U | A | 3.47 | U | A | 3.84 | U | A | 3.77 | U | A |
| PERFLUORONONANOIC ACID (PFNA) | | 0.38 | J | P | 0.41 | J | P | 0.45 | J | P | 0.7 | J | P |
| PERFLUOROOCTANESULFONIC ACID (PFOS) | | 2.67 | U | B | 3.3 | U | B | 5.86 | | | 11.61 | | |
| PERFLUOROTETRADECANOIC ACID (PFTEA) | | 0.91 | UJ | R | 0.96 | UJ | R | 0.93 | U | | 0.94 | UJ | R |
| PERFLUOROTRIDECANOIC ACID (PFTRIA) | | 0.45 | UJ | R | 0.48 | UJ | R | 0.46 | U | | 0.47 | UJ | R |
| PERFLUOROUNDECANOIC ACID (PFUNA) | | 0.91 | U | | 0.96 | U | | 0.93 | U | | 0.94 | U | |

| **PROJ_NO: 08005-WE21** | NSAMPLE | NASB-BLL15-GW-04-0818 | | | NASB-BLL15-GW-RB01-080918 | | | NASB-CCC-GW-01-0818-RE | | | NASB-CCC-GW-02-0818 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SDG: 18-0500** | LAB_ID | J7400-FS | | | J7402-FS | | | J7394-FS | | | J7395-FS | | |
| **FRACTION: PFAS** | SAMP_DATE | 8/9/2018 | | | 8/9/2018 | | | 8/8/2018 | | | 8/8/2018 | | |
| **MEDIA: WATER** | QC_TYPE | NM | | | NM | | | NM | | | NM | | |
| | UNITS | NG/L | | | NG/L | | | NG/L | | | NG/L | | |
| | PCT_SOLIDS | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | | |
| | DUP_OF | | | | | | | | | | | | |
| PARAMETER | | RESULT | VQL | QLCD | RESULT | VQL | QLCD | RESULT | VQL | QLCD | RESULT | VQL | QLCD |
| N-ETHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NEFOSA) | | 0.86 | U | | 0.98 | U | | 0.88 | U | | 0.91 | U | |
| N-METHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NMFOSA) | | 1.72 | U | | 1.96 | U | | 1.75 | U | | 1.82 | U | |
| PENTADECAFLUOROOCTANOIC ACID (PFOA) | | 15.39 | | | 1.38 | J | P | 6.28 | | | 7.62 | | |
| PERFLUOROBUTANESULFONIC ACID (PFBS) | | 2.84 | J | P | 0.49 | U | | 1.27 | J | P | 0.72 | J | P |
| PERFLUOROBUTANOIC ACID (PFBA) | | 17.43 | J- | NR | 0.49 | U | | 3.86 | U | B | 2.05 | U | B |
| PERFLUORODECANOIC ACID (PFDA) | | 0.43 | U | | 0.49 | U | | 0.5 | J | P | 0.45 | U | |
| PERFLUORODODECANOIC ACID (PFDOA) | | 0.43 | U | | 0.49 | U | | 0.44 | U | | 0.45 | U | |
| PERFLUOROHEPTANOIC ACID (PFHPA) | | 4.01 | U | B | 0.63 | J | P | 0.96 | U | B | 3.85 | U | B |
| PERFLUOROHEXANESULFONIC ACID (PFHXS) | | 11.03 | | | 0.27 | J | P | 4 | U | B | 5.2 | | |
| PERFLUOROHEXANOIC ACID (PFHXA) | | 6.76 | | | 1.45 | J | P | 1.19 | U | A | 7.71 | | |
| PERFLUORONONANOIC ACID (PFNA) | | 0.77 | J | P | 0.98 | U | | 0.78 | J | P | 0.29 | J | P |
| PERFLUOROOCTANESULFONIC ACID (PFOS) | | 78.41 | | | 1.03 | J | P | 3.36 | U | B | 6.22 | | |
| PERFLUOROTETRADECANOIC ACID (PFTEA) | | 0.86 | UJ | R | 0.98 | U | | 0.88 | U | | 0.91 | U | |
| PERFLUOROTRIDECANOIC ACID (PFTRIA) | | 0.43 | UJ | R | 0.49 | U | | 0.44 | U | | 0.45 | U | |
| PERFLUOROUNDECANOIC ACID (PFUNA) | | 0.86 | U | | 0.98 | U | | 0.88 | U | | 0.91 | U | |

| | | | | |
|---|---|---|---|---|
| **PROJ_NO: 08005-WE21** | NSAMPLE | NASB-BLL15-GW-FB01-080918 | | |
| **SDG: 18-0520** | LAB_ID | J7401-FS | | |
| **FRACTION: PFAS** | SAMP_DATE | 8/9/2018 | | |
| **MEDIA: WATER** | QC_TYPE | NM | | |
| | UNITS | NG/L | | |
| | PCT_SOLIDS | 0.0 | | |
| | DUP_OF | | | |
| PARAMETER | | RESULT | VQL | QLCD |
| N-ETHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NEFOSA) | | 0.94 | U | |
| N-METHYLPERFLUOROOCTANE SULFONAMIDOACETATE(NMFOSA) | | 1.89 | U | |
| PENTADECAFLUOROOCTANOIC ACID (PFOA) | | 1.28 | J | P |
| PERFLUOROBUTANESULFONIC ACID (PFBS) | | 0.47 | U | |
| PERFLUOROBUTANOIC ACID (PFBA) | | 2.31 | J | P |
| PERFLUORODECANOIC ACID (PFDA) | | 0.47 | U | |
| PERFLUORODODECANOIC ACID (PFDOA) | | 0.47 | U | |
| PERFLUOROHEPTANOIC ACID (PFHPA) | | 0.47 | U | |
| PERFLUOROHEXANESULFONIC ACID (PFHXS) | | 0.38 | U | |
| PERFLUOROHEXANOIC ACID (PFHXA) | | 0.47 | U | |
| PERFLUORONONANOIC ACID (PFNA) | | 0.94 | U | |
| PERFLUOROOCTANESULFONIC ACID (PFOS) | | 0.47 | U | |
| PERFLUOROTETRADECANOIC ACID (PFTEA) | | 0.94 | U | |
| PERFLUOROTRIDECANOIC ACID (PFTRIA) | | 0.47 | U | |
| PERFLUOROUNDECANOIC ACID (PFUNA) | | 0.94 | U | |

**Appendix B**

Results as Reported by the Laboratory

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

| Client ID | NASB-CCC-GW-01-0818 | | | | |
|---|---|---|---|---|---|
| Battelle ID | J7394-FS | | | | |
| Sample Type | SA | | | | |
| Collection Date | 08/08/2018 | | | | |
| Extraction Date | 08/15/2018 | | | | |
| Analysis Date | ~~08/25/2018~~ | 08/29/2018 | | | |
| Analytical Instrument | Sciex 5500 LC/MS/MS | | | | |
| % Moisture | NA | | | | |
| Matrix | GW | | | | |
| Sample Size | 0.285 | | | | |
| Size Unit-Basis | L | | | | |
| Units | ng/L | | MDL | LOD | LOQ |
| PFBA | 3.86 | J | 0.12 | 0.44 | 4.39 |
| PFHxA | 1.19 | J | 0.17 | 0.44 | 4.39 |
| PFHpA | 0.96 | J | 0.14 | 0.44 | 4.39 |
| PFOA | 6.28 | B | 0.16 | 0.44 | 4.39 |
| PFNA | 0.78 | J | 0.23 | 0.88 | 4.39 |
| PFDA | 0.50 | J | 0.14 | 0.44 | 4.39 |
| PFUnA | 0.88 | U | 0.25 | 0.88 | 4.39 |
| PFDoA | 0.44 | U | 0.16 | 0.44 | 4.39 |
| PFTrDA | 0.44 | U | 0.13 | 0.44 | 4.39 |
| PFTeDA | 0.88 | U | 0.22 | 0.88 | 4.39 |
| NMeFOSAA | 1.75 | U | 0.49 | 1.75 | 4.39 |
| NEtFOSAA | 0.88 | U | 0.43 | 0.88 | 4.39 |
| PFBS | 1.27 | J | 0.11 | 0.44 | 4.39 |
| PFHxS | 4.00 | J | 0.10 | 0.35 | 4.39 |
| PFOS | 3.36 | J | 0.17 | 0.44 | 4.39 |

| ***Surrogate Recoveries (%)*** | |
|---|---|
| 13C4-PFBA | 66 |
| 13C5-PFHxA | 95 |
| 13C4-PFHpA | 99 |
| 13C8-PFOA | 86 |
| 13C9-PFNA | 85 |
| 13C6-PFDA | 86 |
| 13C7-PFUnA | 86 |
| 13C2-PFDoA | 77 |
| 13C2-PFTeDA | 80 |
| d3-MeFOSAA | 80 |
| d5-EtFOSAA | 61 |
| 13C3-PFBS | 94 |
| 13C3-PFHxS | 104 |
| 13C8-PFOS | 88 |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

| Client ID | NASB-CCC-GW-02-0818 | | | |
|---|---|---|---|---|
| Battelle ID | J7395-FS | | | |
| Sample Type | SA | | | |
| Collection Date | 08/08/2018 | | | |
| Extraction Date | 08/15/2018 | | | |
| Analysis Date | 08/25/2018 | | | |
| Analytical Instrument | Sciex 5500 LC/MS/MS | | | |
| % Moisture | NA | | | |
| Matrix | GW | | | |
| Sample Size | 0.275 | | | |
| Size Unit-Basis | L | | | |
| Units | ng/L | MDL | LOD | LOQ |
| PFBA | 2.05 J | 0.13 | 0.45 | 4.55 |
| PFHxA | 7.71 B | 0.17 | 0.45 | 4.55 |
| PFHpA | 3.85 J | 0.15 | 0.45 | 4.55 |
| PFOA | 7.62 B | 0.16 | 0.45 | 4.55 |
| PFNA | 0.29 J | 0.24 | 0.91 | 4.55 |
| PFDA | 0.45 U | 0.15 | 0.45 | 4.55 |
| PFUnA | 0.91 U | 0.26 | 0.91 | 4.55 |
| PFDoA | 0.45 U | 0.16 | 0.45 | 4.55 |
| PFTrDA | 0.45 U | 0.14 | 0.45 | 4.55 |
| PFTeDA | 0.91 U | 0.23 | 0.91 | 4.55 |
| NMeFOSAA | 1.82 U | 0.51 | 1.82 | 4.55 |
| NEtFOSAA | 0.91 U | 0.45 | 0.91 | 4.55 |
| PFBS | 0.72 J | 0.12 | 0.45 | 4.55 |
| PFHxS | 5.20 | 0.10 | 0.36 | 4.55 |
| PFOS | 6.22 | 0.17 | 0.45 | 4.55 |
| ***Surrogate Recoveries (%)*** | | | | |
| 13C4-PFBA | 58 | | | |
| 13C5-PFHxA | 88 | | | |
| 13C4-PFHpA | 94 | | | |
| 13C8-PFOA | 76 | | | |
| 13C9-PFNA | 85 | | | |
| 13C6-PFDA | 83 | | | |
| 13C7-PFUnA | 75 | | | |
| 13C2-PFDoA | 77 | | | |
| 13C2-PFTeDA | 67 | | | |
| d3-MeFOSAA | 72 | | | |
| d5-EtFOSAA | 66 | | | |
| 13C3-PFBS | 102 | | | |
| 13C3-PFHxS | 86 | | | |
| 13C8-PFOS | 83 | | | |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

| Client ID | NASB-BLL15-GW-02-0818 | | | | |
|---|---|---|---|---|---|
| Battelle ID | J7396-FS | | | | |
| Sample Type | SA | | | | |
| Collection Date | 08/09/2018 | | | | |
| Extraction Date | 08/15/2018 | | | | |
| Analysis Date | 08/25/2018 | | | | |
| Analytical Instrument | Sciex 5500 LC/MS/MS | | | | |
| % Moisture | NA | | | | |
| Matrix | GW | | | | |
| Sample Size | 0.270 | | | | |
| Size Unit-Basis | L | | | | |
| Units | ng/L | | MDL | LOD | LOQ |
| PFBA | 0.46 | U | 0.13 | 0.46 | 4.63 |
| PFHxA | 3.84 | J | 0.18 | 0.46 | 4.63 |
| PFHpA | 1.99 | J | 0.15 | 0.46 | 4.63 |
| PFOA | 7.86 | B | 0.17 | 0.46 | 4.63 |
| PFNA | 0.45 | J | 0.24 | 0.93 | 4.63 |
| PFDA | 0.46 | U | 0.15 | 0.46 | 4.63 |
| PFUnA | 0.93 | U | 0.27 | 0.93 | 4.63 |
| PFDoA | 0.46 | U | 0.17 | 0.46 | 4.63 |
| PFTrDA | 0.46 | U | 0.14 | 0.46 | 4.63 |
| PFTeDA | 0.93 | U | 0.23 | 0.93 | 4.63 |
| NMeFOSAA | 1.85 | U | 0.52 | 1.85 | 4.63 |
| NEtFOSAA | 0.93 | U | 0.45 | 0.93 | 4.63 |
| PFBS | 2.26 | J | 0.12 | 0.46 | 4.63 |
| PFHxS | 11.26 | | 0.10 | 0.37 | 4.63 |
| PFOS | 5.86 | B | 0.18 | 0.46 | 4.63 |

***Surrogate Recoveries (%)***

| | |
|---|---|
| 13C4-PFBA | 50 |
| 13C5-PFHxA | 97 |
| 13C4-PFHpA | 111 |
| 13C8-PFOA | 82 |
| 13C9-PFNA | 90 |
| 13C6-PFDA | 87 |
| 13C7-PFUnA | 75 |
| 13C2-PFDoA | 68 |
| 13C2-PFTeDA | 55 |
| d3-MeFOSAA | 96 |
| d5-EtFOSAA | 92 |
| 13C3-PFBS | 111 |
| 13C3-PFHxS | 122 |
| 13C8-PFOS | 99 |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

| Client ID | NASB-BLL15-GW-01-0818 | | | | |
|---|---|---|---|---|---|
| Battelle ID | J7397-FS | | | | |
| Sample Type | SA | | | | |
| Collection Date | 08/09/2018 | | | | |
| Extraction Date | 08/15/2018 | | | | |
| Analysis Date | 08/25/2018 | | | | |
| Analytical Instrument | Sciex 5500 LC/MS/MS | | | | |
| % Moisture | NA | | | | |
| Matrix | GW | | | | |
| Sample Size | 0.260 | | | | |
| Size Unit-Basis | L | | | | |
| Units | ng/L | | MDL | LOD | LOQ |
| PFBA | 57.74 | | 0.13 | 0.48 | 4.81 |
| PFHxA | 3.47 | J | 0.18 | 0.48 | 4.81 |
| PFHpA | 1.90 | J | 0.15 | 0.48 | 4.81 |
| PFOA | 6.81 | B | 0.17 | 0.48 | 4.81 |
| PFNA | 0.41 | J | 0.25 | 0.96 | 4.81 |
| PFDA | 0.48 | U | 0.15 | 0.48 | 4.81 |
| PFUnA | 0.96 | U | 0.28 | 0.96 | 4.81 |
| PFDoA | 0.48 | U | 0.17 | 0.48 | 4.81 |
| PFTrDA | 0.48 | U | 0.14 | 0.48 | 4.81 |
| PFTeDA | 0.96 | U | 0.24 | 0.96 | 4.81 |
| NMeFOSAA | 1.92 | U | 0.54 | 1.92 | 4.81 |
| NEtFOSAA | 0.96 | U | 0.47 | 0.96 | 4.81 |
| PFBS | 3.10 | J | 0.13 | 0.48 | 4.81 |
| PFHxS | 12.63 | | 0.11 | 0.38 | 4.81 |
| PFOS | 3.30 | J | 0.18 | 0.48 | 4.81 |
| ***Surrogate Recoveries (%)*** | | | | | |
| 13C4-PFBA | 8 | N | | | |
| 13C5-PFHxA | 112 | | | | |
| 13C4-PFHpA | 126 | | | | |
| 13C8-PFOA | 102 | | | | |
| 13C9-PFNA | 104 | | | | |
| 13C6-PFDA | 99 | | | | |
| 13C7-PFUnA | 91 | | | | |
| 13C2-PFDoA | 73 | | | | |
| 13C2-PFTeDA | 43 | N | | | |
| d3-MeFOSAA | 95 | | | | |
| d5-EtFOSAA | 78 | | | | |
| 13C3-PFBS | 100 | | | | |
| 13C3-PFHxS | 128 | | | | |
| 13C8-PFOS | 95 | | | | |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

| Client ID | NASB-BLL15-DUP-080918 | | | | |
|---|---|---|---|---|---|
| Battelle ID | J7398-FS | | | | |
| Sample Type | SA | | | | |
| Collection Date | 08/09/2018 | | | | |
| Extraction Date | 08/15/2018 | | | | |
| Analysis Date | 08/25/2018 | | | | |
| Analytical Instrument | Sciex 5500 LC/MS/MS | | | | |
| % Moisture | NA | | | | |
| Matrix | GW | | | | |
| Sample Size | 0.275 | | | | |
| Size Unit-Basis | L | | | | |
| Units | ng/L | | MDL | LOD | LOQ |
| PFBA | 43.74 | | 0.13 | 0.45 | 4.55 |
| PFHxA | 4.16 | J | 0.17 | 0.45 | 4.55 |
| PFHpA | 2.09 | J | 0.15 | 0.45 | 4.55 |
| PFOA | 7.41 | B | 0.16 | 0.45 | 4.55 |
| PFNA | 0.38 | J | 0.24 | 0.91 | 4.55 |
| PFDA | 0.45 | U | 0.15 | 0.45 | 4.55 |
| PFUnA | 0.91 | U | 0.26 | 0.91 | 4.55 |
| PFDoA | 0.45 | U | 0.16 | 0.45 | 4.55 |
| PFTrDA | 0.45 | U | 0.14 | 0.45 | 4.55 |
| PFTeDA | 0.91 | U | 0.23 | 0.91 | 4.55 |
| NMeFOSAA | 1.82 | U | 0.51 | 1.82 | 4.55 |
| NEtFOSAA | 0.91 | U | 0.45 | 0.91 | 4.55 |
| PFBS | 3.04 | J | 0.12 | 0.45 | 4.55 |
| PFHxS | 14.22 | | 0.10 | 0.36 | 4.55 |
| PFOS | 2.67 | J | 0.17 | 0.45 | 4.55 |
| ***Surrogate Recoveries (%)*** | | | | | |
| 13C4-PFBA | 7 | N | | | |
| 13C5-PFHxA | 79 | | | | |
| 13C4-PFHpA | 97 | | | | |
| 13C8-PFOA | 78 | | | | |
| 13C9-PFNA | 84 | | | | |
| 13C6-PFDA | 79 | | | | |
| 13C7-PFUnA | 67 | | | | |
| 13C2-PFDoA | 54 | | | | |
| 13C2-PFTeDA | 36 | N | | | |
| d3-MeFOSAA | 69 | | | | |
| d5-EtFOSAA | 67 | | | | |
| 13C3-PFBS | 80 | | | | |
| 13C3-PFHxS | 86 | | | | |
| 13C8-PFOS | 79 | | | | |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

| Client ID | NASB-BLL15-GW-03-0818 | | | | |
|---|---|---|---|---|---|
| Battelle ID | J7399-FS | | | | |
| Sample Type | SA | | | | |
| Collection Date | 08/09/2018 | | | | |
| Extraction Date | 08/15/2018 | | | | |
| Analysis Date | 08/25/2018 | | | | |
| Analytical Instrument | Sciex 5500 LC/MS/MS | | | | |
| % Moisture | NA | | | | |
| Matrix | GW | | | | |
| Sample Size | 0.265 | | | | |
| Size Unit-Basis | L | | | | |
| Units | ng/L | | MDL | LOD | LOQ |
| PFBA | 0.47 | U | 0.13 | 0.47 | 4.72 |
| PFHxA | 3.77 | J | 0.18 | 0.47 | 4.72 |
| PFHpA | 2.50 | J | 0.15 | 0.47 | 4.72 |
| PFOA | 8.52 | B | 0.17 | 0.47 | 4.72 |
| PFNA | 0.70 | J | 0.25 | 0.94 | 4.72 |
| PFDA | 0.47 | U | 0.15 | 0.47 | 4.72 |
| PFUnA | 0.94 | U | 0.27 | 0.94 | 4.72 |
| PFDoA | 0.47 | U | 0.17 | 0.47 | 4.72 |
| PFTrDA | 0.47 | U | 0.14 | 0.47 | 4.72 |
| PFTeDA | 0.94 | U | 0.24 | 0.94 | 4.72 |
| NMeFOSAA | 1.89 | U | 0.53 | 1.89 | 4.72 |
| NEtFOSAA | 0.94 | U | 0.46 | 0.94 | 4.72 |
| PFBS | 1.80 | J | 0.12 | 0.47 | 4.72 |
| PFHxS | 10.73 | | 0.10 | 0.38 | 4.72 |
| PFOS | 11.61 | | 0.18 | 0.47 | 4.72 |
| ***Surrogate Recoveries (%)*** | | | | | |
| 13C4-PFBA | 13 | N | | | |
| 13C5-PFHxA | 93 | | | | |
| 13C4-PFHpA | 101 | | | | |
| 13C8-PFOA | 89 | | | | |
| 13C9-PFNA | 97 | | | | |
| 13C6-PFDA | 81 | | | | |
| 13C7-PFUnA | 82 | | | | |
| 13C2-PFDoA | 69 | | | | |
| 13C2-PFTeDA | 38 | N | | | |
| d3-MeFOSAA | 106 | | | | |
| d5-EtFOSAA | 91 | | | | |
| 13C3-PFBS | 97 | | | | |
| 13C3-PFHxS | 118 | | | | |
| 13C8-PFOS | 107 | | | | |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

| Client ID | NASB-BLL15-GW-04-0818 | | | | |
|---|---|---|---|---|---|
| Battelle ID | J7400-FS | | | | |
| Sample Type | SA | | | | |
| Collection Date | 08/09/2018 | | | | |
| Extraction Date | 08/15/2018 | | | | |
| Analysis Date | 08/25/2018 | | | | |
| Analytical Instrument | Sciex 5500 LC/MS/MS | | | | |
| % Moisture | NA | | | | |
| Matrix | GW | | | | |
| Sample Size | 0.290 | | | | |
| Size Unit-Basis | L | | | | |
| Units | ng/L | | MDL | LOD | LOQ |
| PFBA | 17.43 | | 0.12 | 0.43 | 4.31 |
| PFHxA | 6.76 | B | 0.16 | 0.43 | 4.31 |
| PFHpA | 4.01 | J | 0.14 | 0.43 | 4.31 |
| PFOA | 15.39 | | 0.16 | 0.43 | 4.31 |
| PFNA | 0.77 | J | 0.22 | 0.86 | 4.31 |
| PFDA | 0.43 | U | 0.14 | 0.43 | 4.31 |
| PFUnA | 0.86 | U | 0.25 | 0.86 | 4.31 |
| PFDoA | 0.43 | U | 0.16 | 0.43 | 4.31 |
| PFTrDA | 0.43 | U | 0.13 | 0.43 | 4.31 |
| PFTeDA | 0.86 | U | 0.22 | 0.86 | 4.31 |
| NMeFOSAA | 1.72 | U | 0.48 | 1.72 | 4.31 |
| NEtFOSAA | 0.86 | U | 0.42 | 0.86 | 4.31 |
| PFBS | 2.84 | J | 0.11 | 0.43 | 4.31 |
| PFHxS | 11.03 | | 0.09 | 0.34 | 4.31 |
| PFOS | 78.41 | | 0.16 | 0.43 | 4.31 |
| ***Surrogate Recoveries (%)*** | | | | | |
| 13C4-PFBA | 19 | N | | | |
| 13C5-PFHxA | 72 | | | | |
| 13C4-PFHpA | 91 | | | | |
| 13C8-PFOA | 71 | | | | |
| 13C9-PFNA | 71 | | | | |
| 13C6-PFDA | 70 | | | | |
| 13C7-PFUnA | 59 | | | | |
| 13C2-PFDoA | 50 | | | | |
| 13C2-PFTeDA | 38 | N | | | |
| d3-MeFOSAA | 69 | | | | |
| d5-EtFOSAA | 87 | | | | |
| 13C3-PFBS | 100 | | | | |
| 13C3-PFHxS | 90 | | | | |
| 13C8-PFOS | 76 | | | | |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

| Client ID | NASB-BLL15-GW-RB01-080918 | | | | |
|---|---|---|---|---|---|
| Battelle ID | J7402-FS | | | | |
| Sample Type | SA | | | | |
| Collection Date | 08/09/2018 | | | | |
| Extraction Date | 08/15/2018 | | | | |
| Analysis Date | 08/25/2018 | | | | |
| Analytical Instrument | Sciex 5500 LC/MS/MS | | | | |
| % Moisture | NA | | | | |
| Matrix | QC | | | | |
| Sample Size | 0.255 | | | | |
| Size Unit-Basis | L | | | | |
| Units | ng/L | | MDL | LOD | LOQ |
| PFBA | 0.49 | U | 0.14 | 0.49 | 4.90 |
| PFHxA | 1.45 | J | 0.19 | 0.49 | 4.90 |
| PFHpA | 0.63 | J | 0.16 | 0.49 | 4.90 |
| PFOA | 1.38 | J | 0.18 | 0.49 | 4.90 |
| PFNA | 0.98 | U | 0.25 | 0.98 | 4.90 |
| PFDA | 0.49 | U | 0.16 | 0.49 | 4.90 |
| PFUnA | 0.98 | U | 0.28 | 0.98 | 4.90 |
| PFDoA | 0.49 | U | 0.18 | 0.49 | 4.90 |
| PFTrDA | 0.49 | U | 0.15 | 0.49 | 4.90 |
| PFTeDA | 0.98 | U | 0.25 | 0.98 | 4.90 |
| NMeFOSAA | 1.96 | U | 0.55 | 1.96 | 4.90 |
| NEtFOSAA | 0.98 | U | 0.48 | 0.98 | 4.90 |
| PFBS | 0.49 | U | 0.13 | 0.49 | 4.90 |
| PFHxS | 0.27 | J | 0.11 | 0.39 | 4.90 |
| PFOS | 1.03 | J | 0.19 | 0.49 | 4.90 |

***Surrogate Recoveries (%)***

| | |
|---|---|
| 13C4-PFBA | 81 |
| 13C5-PFHxA | 98 |
| 13C4-PFHpA | 102 |
| 13C8-PFOA | 94 |
| 13C9-PFNA | 94 |
| 13C6-PFDA | 103 |
| 13C7-PFUnA | 98 |
| 13C2-PFDoA | 87 |
| 13C2-PFTeDA | 85 |
| d3-MeFOSAA | 93 |
| d5-EtFOSAA | 82 |
| 13C3-PFBS | 97 |
| 13C3-PFHxS | 93 |
| 13C8-PFOS | 90 |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

| | | | | |
|---|---|---|---|---|
| Client ID | NASB-BLL15-GW-FB01-080918 | | | |
| Battelle ID | J7401-FS | | | |
| Sample Type | SA | | | |
| Collection Date | 08/09/2018 | | | |
| Extraction Date | 08/22/2018 | | | |
| Analysis Date | 08/25/2018 | | | |
| Analytical Instrument | Sciex 5500 LC/MS/MS | | | |
| % Moisture | NA | | | |
| Matrix | QC | | | |
| Sample Size | 0.265 | | | |
| Size Unit-Basis | L | | | |
| Units | ng/L | MDL | LOD | LOQ |
| PFBA | 2.31 J | 0.13 | 0.47 | 4.72 |
| PFHxA | 0.47 U | 0.18 | 0.47 | 4.72 |
| PFHpA | 0.47 U | 0.15 | 0.47 | 4.72 |
| PFOA | 1.28 J | 0.17 | 0.47 | 4.72 |
| PFNA | 0.94 U | 0.25 | 0.94 | 4.72 |
| PFDA | 0.47 U | 0.15 | 0.47 | 4.72 |
| PFUnA | 0.94 U | 0.27 | 0.94 | 4.72 |
| PFDoA | 0.47 U | 0.17 | 0.47 | 4.72 |
| PFTrDA | 0.47 U | 0.14 | 0.47 | 4.72 |
| PFTeDA | 0.94 U | 0.24 | 0.94 | 4.72 |
| NMeFOSAA | 1.89 U | 0.53 | 1.89 | 4.72 |
| NEtFOSAA | 0.94 U | 0.46 | 0.94 | 4.72 |
| PFBS | 0.47 U | 0.12 | 0.47 | 4.72 |
| PFHxS | 0.38 U | 0.10 | 0.38 | 4.72 |
| PFOS | 0.47 U | 0.18 | 0.47 | 4.72 |

***Surrogate Recoveries (%)***

| | |
|---|---|
| 13C4-PFBA | 53 |
| 13C5-PFHxA | 52 |
| 13C4-PFHpA | 54 |
| 13C8-PFOA | 56 |
| 13C9-PFNA | 51 |
| 13C6-PFDA | 59 |
| 13C7-PFUnA | 57 |
| 13C2-PFDoA | 54 |
| 13C2-PFTeDA | 51 |
| d3-MeFOSAA | 52 |
| d5-EtFOSAA | 55 |
| 13C3-PFBS | 57 |
| 13C3-PFHxS | 57 |
| 13C8-PFOS | 59 |

**Appendix C**

Support Documentation

| ANALYTE | ORIGINAL BLL15-GW-01 | DUPLICATE BLL15-DUP | RL | RPD | RPD > 50% | ORIGINAL SAMPLE CONC >2xRL | DUPLICATE SAMPLE CONC >2xRL | DIFFERENCE >2XRL |
|---|---|---|---|---|---|---|---|---|
| PENTADECAFLUOROOCTANOIC ACID (PFOA) | 6.81 | 7.41 | 4.81 | 8.439 | FALSE | FALSE | FALSE | FALSE |
| PERFLUOROBUTANESULFONIC ACID (PFBS) | 3.1 | 3.04 | 4.81 | 1.954 | FALSE | FALSE | FALSE | FALSE |
| PERFLUOROBUTANOIC ACID (PFBA) | 57.74 | 43.74 | 4.81 | 27.592 | FALSE | TRUE | TRUE | TRUE |
| PERFLUOROHEPTANOIC ACID (PFHPA) | 1.9 | 2.09 | 4.81 | 9.524 | FALSE | FALSE | FALSE | FALSE |
| PERFLUOROHEXANESULFONIC ACID (PFHXS) | 12.63 | 14.22 | 4.81 | 11.844 | FALSE | TRUE | TRUE | FALSE |
| PERFLUOROHEXANOIC ACID (PFHXA) | 3.47 | 4.16 | 4.81 | 18.087 | FALSE | FALSE | FALSE | FALSE |
| PERFLUORONONANOIC ACID (PFNA) | 0.41 | 0.38 | 4.81 | 7.595 | FALSE | FALSE | FALSE | FALSE |
| PERFLUOROOCTANESULFONIC ACID (PFOS) | 3.3 | 2.67 | 4.81 | 21.106 | FALSE | FALSE | FALSE | FALSE |

Sample Summary

Client: Tetra Tech Inc.
SDG: 18-0500
Project/Site: Former Naval Air Station, Brunswick, Maine
CTO: WE21

| Lab Sample ID | Client Sample ID | Matrix | Collection Date | Receipt Date |
|---|---|---|---|---|
| CR552PB-FS | Procedural Blank | WATER | 8/15/2018 | 8/15/2018 |
| CR553LCS-FS | Laboratory Control Sample | WATER | 8/15/2018 | 8/15/2018 |
| J7394-FS | NASB-CCC-GW-01-0818 | GW | 8/8/2018 | 8/10/2018 |
| J7395-FS | NASB-CCC-GW-02-0818 | GW | 8/8/2018 | 8/10/2018 |
| J7396-FS | NASB-BLL15-GW-02-0818 | GW | 8/9/2018 | 8/10/2018 |
| J7397-FS | NASB-BLL15-GW-01-0818 | GW | 8/9/2018 | 8/10/2018 |
| J7397MS-FS | NASB-BLL15-GW-01-0818 | GW | 8/9/2018 | 8/10/2018 |
| J7397MSD-FS | NASB-BLL15-GW-01-0818 | GW | 8/9/2018 | 8/10/2018 |
| J7398-FS | NASB-BLL15-DUP-080918 | GW | 8/9/2018 | 8/10/2018 |
| J7399-FS | NASB-BLL15-GW-03-0818 | GW | 8/9/2018 | 8/10/2018 |
| J7400-FS | NASB-BLL15-GW-04-0818 | GW | 8/9/2018 | 8/10/2018 |
| J7402-FS | NASB-BLL15-GW-RB01-080918 | QC | 8/9/2018 | 8/10/2018 |

Tetra Tech, Inc.

# CHAIN OF CUSTODY | NUMBER No. 0603 | PAGE 1 of 1

| | | | | |
|---|---|---|---|---|
| PROJECT NO: 112G0800SWF21 | FACILITY: NAS BRUNSWICK | PROJECT MANAGER JEFF ORIENT | PHONE NUMBER 412-921-7080 | LABORATORY NAME AND CONTACT: 781-681-5588 BATTELLE JON THORN |
| SAMPLERS (SIGNATURE) Fred Ramser | | FIELD OPERATIONS LEADER FRED W. RAMSER | PHONE NUMBER 412-921-8838 | ADDRESS 141 LONGWATER DR, SUITE 202 |
| | | CARRIER/WAYBILL NUMBER FED EX 8111 8554 2137 | | CITY, STATE NORWELL, MA 02061 |

STANDARD TAT [X]
RUSH TAT [ ] 24 hr. [ ] 48 hr. [ ] 72 hr. [ ] 7 day [ ] 14 day

| DATE (YEAR 2018) | TIME | SAMPLE ID | LOCATION ID | TOP DEPTH (FT) | BOTTOM DEPTH (FT) | MATRIX (GW, SO, SW, SD, QC, ETC.) | COLLECTION METHOD GRAB (G) COMP (C) | No. OF CONTAINERS | TYPE OF ANALYSIS: PFAS | | | | | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | CONTAINER TYPE PLASTIC (P) or GLASS (G) | P | | | | | | | | | |
| | | | | | | | | PRESERVATIVE USED | NONE | | | | | | | | | |
| 8/8 | 1512 | NASB-CCC-GW-01-0818 | CC MW01 | — | — | GW | G | 2 | ✓ | | J7394 | | | | | | | |
| 8/8 | 1606 | NASB-CCC-GW-02-0818 | CC MW02 | — | — | GW | G | 2 | ✓ | | J7395 | | | | | | | |
| 8/9 | 0837 | NASB-BLL15-GW-02-0818 | BLL15 MW02 | — | — | GW | G | 2 | ✓ | | J7396 | | | | | | | |
| 8/9 | 0940 | NASB-BLL15-GW-01-0818 | BLL15 MW01 | — | — | GW | G | 6† | ✓ | | J7397 | | | | | | | * RUN MS/MSD |
| 8/9 | 0945 | NASB-BLL15-DUP-080918 | — | — | — | GW | G | 2 | ✓ | | J7398 | | | | | | | |
| 8/9 | 1054 | NASB-BLL15-GW-03-0818 | BLL15 MW03 | — | — | GW | G | 2 | ✓ | | J7399 | | | | | | | |
| 8/9 | 1216 | NASB-BLL15-GW-04-0818 | BLL15 MW04 | — | — | GW | G | 2 | ✓ | | J7400 | | | | | | | |
| 8/9 | 1400 | NASB-BLL15-GW-FB01-080918 | QC | — | — | QC | G | 2 | ✓ | | J7401 | | | | | | | |
| 8/9 | 1415 | NASB-BLL15-GW-RB01-080918 | QC | — | — | QC | G | 2 | ✓ | | J7402 | | | | | | | |

| | DATE | TIME | | DATE | TIME |
|---|---|---|---|---|---|
| 1. RELINQUISHED BY Fred Ramser | 8-9-18 | 1630 | 1. RECEIVED BY FED EX | | |
| 2. RELINQUISHED BY | DATE | TIME | 2. RECEIVED BY Battelle | DATE 8-10-18 | TIME 1030 |
| 3. RELINQUISHED BY | DATE | TIME | 3. RECEIVED BY | DATE | TIME |

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

# QA/QC Summary
# Batch 18-0500

| | |
|---|---|
| Project: | CTO-WE21: Former Naval Air Station, Brunswick, Maine |
| Parameters: | PFAS |
| Laboratory: | Battelle, Norwell, MA |
| Matrix: | GW |
| Data Set: | DP-18-0217 |
| Analytical SOP: | 5-369 |
| Method Reference: | PFAS to QSM 5.1 Table B-15 |

| Sample Custody | | |
|---|---|---|
| Collection Date | Receipt Date | Temp (°C) |
| 8/8 and 9/2018 | 8/10/2018 | 0.9 |
| Corrective Actions | None. | |
| Sample Storage | The water samples were stored refrigerated until extraction. | |
| Related samples | This FRB sample is related to these field samples in SDG 18-0520. | |

| | METHOD SUMMARIES |
|---|---|
| Sample Preparation | Water samples were spiked with surrogates in the original sample container from the field. The water was extracted using a weak ion exchange solid phase extraction (SPE) cartridge and eluted from the SPE with 0.4% $NH_3$ in methanol. Extracts were split and concentrated to dryness under nitrogen with a water bath set between 35 °C and 45 °C, reconstituted with 80:20 methanol/water (V/V) and fortified with internal standard. Extracts were transferred for LC-MS/MS analysis. |
| Prep comments | Samples NASB-BLL15-GW-02-0818 (J7396-FS), NASB-BLL15-GW-01-0818 (J7397-FS), NASB-BLL15-GW-01-0818 (J7397MS-FS), NASB-BLL15-GW-01-0818 (J7397MSD-FS), NASB-BLL15-DUP-080918 (J7398-FS), NASB-BLL15-GW-03-0818 (J7399-FS), and NASB-BLL15-GW-04-0818 (J7400-FS) had a yellow color in the original sample containers. |
| Analysis | PFAS were measured by liquid chromatography tandem mass spectrometry (LC-MS/MS) in the multiple reaction monitoring (MRM). An initial calibration consisting of representative target analytes, labelled analogs, and internal standards was analyzed prior to analysis to demonstrate the linear range of analysis. Calibration verification was performed at the beginning and end of 10 injections and at the end of each sequence. Target PFAS were quantified using the isotope dilution method. Samples are reported in ng/L concentrations. |
| Analysis Comments | Samples analyzed on Sciex 5500 LC-MS/MS.<br><br>The original sequence for Data File NP_08212018.wiff had an instrument error that lead to retention time shifts, all samples were re-run with the sequence for Data File 18-0501-515-520-500.wiff. The original sequence can be found in the unused data section of the full data package.<br><br>Sample NASB-CCC-GW-01-0818 (J7394-FS) failed internal standard area criteria for all four internal standards in the sequence for Data File 18-0501-515-520-500.wiff, this sample was re-run on the sequence for Data File 18-0511_18- |

# QA/QC Summary
# Batch 18-0500

| | |
|---|---|
| | 0517.wiff with passing results, this sample was reported from Data File 18-0511_18-0517.wiff with quant methods 18-0500_BASE_R and 18-0500_SIS_R.<br><br>Sample NASB-BLL15-GW-04-0818 (J7400-FS) had ion ratio exceedances (> 50% RPD) for PFOA. |

| Holding Times | Extraction Date(s) | Analysis Date(s) |
|---|---|---|
| | 8/15/2018 | 8/24, 25 and 28, 29/2018 |

| | |
|---|---|
| Procedural Blank (PB) | A PB was prepared with this analytical batch to ensure the sample extraction and analysis methods are free of contamination. |
| ≤ ½ the LOQ Samples >10x PB | 10 exceedances noted. |
| | PFHxA was detected in samples NASB-CCC-GW-02-0818 (J7395-FS), NASB-BLL15-GW-04-0818 (J7400-FS), and the LCS at a concentration less than 10 times the amount found in the PB. The amount found in the PB (1.89 ng/L) was less than ½ the LOQ.<br><br>PFOA was detected in samples NASB-CCC-GW-01-0818 (J7394-FS), NASB-CCC-GW-02-0818 (J7395-FS), NASB-BLL15-GW-02-0818 (J7396-FS), NASB-BLL15-GW-01-0818 (J7397-FS), NASB-BLL15-DUP-080918 (J7398-FS), and NASB-BLL15-GW-03-0818 (J7399-FS) at a concentration less than 10 times the amount found in the PB. The amount found in the PB (1.21 ng/L) was less than ½ the LOQ.<br><br>PFOS was detected in sample NASB-BLL15-GW-02-0818 (J7396-FS) at a concentration less than 10 times the amount found in the PB. The amount found in the PB (0.60 ng/L) was less than ½ the LOQ.<br><br>The PB was re-run to verify initial results, the re-analysis can be found in the unused data section of the full data package. |

| | |
|---|---|
| Laboratory Control Spike (LCS) | A LCS was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure accuracy. |
| Laboratory derived control limits for recovery | No exceedances noted. |
| | No comments. |

| | |
|---|---|
| Matrix Spike (MS) / Duplicate (MSD) | A MS/MSD were prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure accuracy. The relative percent difference was calculated to measure precision. |
| Laboratory derived control limits for recovery, RPD ≤ 30% | No exceedances noted. |
| | No comments. |

# QA/QC Summary
# Batch 18-0500

| | |
|---|---|
| Extracted Internal Standard Analytes | Labelled analog compounds were added prior to extraction. The recoveries are calculated to measure extraction efficiency. |
| 50-150% of true value | 12 exceedances noted. |
| | The surrogates 13C4-PFBA and 13C2-PFTeDA for samples NASB-BLL15-GW-01-0818 (J7397-FS), NASB-BLL15-GW-01-0818 (J7397MS-FS), NASB-BLL15-GW-01-0818 (J7397MSD-FS), NASB-BLL15-DUP-080918 (J7398-FS), NASB-BLL15-GW-03-0818 (J7399-FS), and NASB-BLL15-GW-04-0818 (J7400-FS) failed low. All extracts were re-run to verify the low recoveries, re-analysis results can be found in the unused data section of the full data package. |

| | |
|---|---|
| Internal Standard Analytes | Labelled analog compounds were added prior to analysis. |
| +/- 50% of the area of the L5 calibration point. | Five exceedances noted. |
| | 13C2-PFBA in samples NASB-BLL15-GW-01-0818 (J7397-FS), NASB-BLL15-GW-01-0818 (J7397MS-FS), NASB-BLL15-GW-01-0818 (J7397MSD-FS), NASB-BLL15-DUP-080918 (J7398-FS), and NASB-BLL15-GW-03-0818 (J7399-FS) were outside criteria in the sequence for Data File 18-0501-515-520-500.wiff, these samples were re-run on the sequence for Data File 18-0511_18-0517.wiff confirming the exceedances. The original results were reported, and the re-analysis can be found in the unused data section of the final data package. |

| | |
|---|---|
| Initial Calibration (ICAL) | The LC-MS/MS was calibrated with multi-level calibration curve for all compounds using linear or quadradic curve fitting. |
| +/- 30% of true value, $R^2 \geq 0.99$ | No exceedances noted. |
| | No comments. |

| | |
|---|---|
| Independent Calibration Check (ICC) | The independent check was run after each initial calibration to verify the calibration. This standard is from a different source than the ICAL. |
| +/- 30% of true value | No exceedances noted. |
| | No comments. |

| | |
|---|---|
| Continuing Calibration Verification (CCV) | Continuing calibration standards were run at the beginning and end of 10 injections and at the end of the sequence to ensure that initial calibration is still valid. |
| +/- 30% of true value | No exceedances noted. |
| | No comments. |

| | |
|---|---|
| Instrument Blank (IB) | Immediately following the highest standard analyzed and daily prior to sample analysis. |
| ≤ ½ the LOQ | No exceedances noted. |
| | No comments. |

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project Number: 100122108-CTOWE21
Preparation Batch: 18-0500
Data Set: DP-18-0217
Test Code: Master_369

| QC Parameter: | Exceed: | Justification: |
|---|---|---|
| Procedural Blank | 0 | None |
| PB Measurement Quality Objective | 10 | In Samples CR553LCS, J7400 and J7395 PFHxA was detected ten times lower than that of the PB. In samples J7394, J7395, J7396 J7397, J7398 and J7399 PFOA was detected ten times lower than that of the PB. The blank was run previously with the similar results and that data can be found in the unused data section of this package. DMS 8/30/2018 |
| Laboratory Control Sample | 0 | None |
| Matrix Spike / Matrix Spike Duplicate Recovery | 0 | None |
| Matrix Spike / Matrix Spike Duplicate Precision | 0 | None |
| Extracted Internal Standard Analytes (Surrogates) | 12 | 13C4-PFBA and 13C2-PFTeDA fall below passing criteria in samples J7397, J7398, J7399, J7400, J7397MS and J7397MSD. These samples were rerun against a new instrument and the results confirmed (this data can be found in the unused data section of this data package). All of these extracts were dark yellow in color and where all other extracted SIS's pass, matrix would have caused the surpression of the 13C4-PFBA and 13C2-PFTeDA. DMS 8/30/2018 |
| Instrument Calibration | 0 | None |
| Instrument Blank | 0 | None |
| Independent Calibration Check | 0 | None |
| Continuing Calibration Verification | 0 | None |

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## MISCELLANEOUS DOCUMENTATION FORM

| | | | |
|---|---|---|---|
| **Project Title:** | CTO-WE21: Former Naval Air Station, B | **Data Set Number:** | DP-18-0217 |
| **Project Number:** | 100122108-CTOWE21 | **Prep Batch Number:** | 18-0500 |
| **Entered By:** | Denise Schumitz | **Entered On:** | 08/30/2018 |
| **Test Code (Matrix Type):** | Master_369(L) | | |

Samples that were manually integrated are noted on the quant reports with the comment (TRUE).
DMS 8/30/2018

This batch was originally run on 8/21/2018 however due to an instrument error there was a retention time shift that warranted the samples to be rerun. The original data can be found in the unused data section of this data pacakge.
DMS 8/30/2018

JY38 is not being used for PFHpA in method BASE_A. There is no impact on the data once this point is removed from the calibration.
DMS 8/30/2018

JY38 is not being used for PFBA and NEtFOSAA. There is no impact on the data once this point is removed from the calibration.
DMS 8/30/2018

Sample J7394 does not meet passing IS area criteria for 13C3-PFBA, 13C2-PFOA, 13C2-PFDA and 13C4-PFOS. A fresh aliquot of this sample was taken and run with passing criteria from methods 18-0500_SIS_R and 18-0500_BASE_R.
DMS 8/30/2018

Samples J7397, J7397MS, J7397MSD, J7398 and J7399 do not meet passing IS area criteria for 13C3-PFBA but do for all other IS areas. A fresh aliquot was taken of these samples and rerun with confirming results in method 18-0500_SIS_R. These sample extracts were all dark yellow in color and 13C3-PFBA is the first eluting analyte from the analytical run, it can be presumed that matrix is effecting the results. The orginal results are being reported from 18-0500_SIS_A.
DMS 8/30/2018

Sample J7400 has an ion ratio >50% RPD for PFOA.
DMS 8/30/2018

**Task Leader Approval:**

**SupervisorApproval:**

**PM Approval:**

Digitally signed by Jonathan Thorn
Date: 2018.08.30 15:36:52 -04'00'

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

| Client ID | JY46 IB | | | |
|---|---|---|---|---|
| Battelle ID | JY46 IB_08/24/2018 | | | |
| Sample Type | IB | | | |
| Collection Date | NA | | | |
| Extraction Date | NA | | | |
| Analysis Date | 08/24/2018 | | | |
| Analytical Instrument | Sciex 5500 LC/MS/MS | | | |
| % Moisture | NA | | | |
| Matrix | Water | | | |
| Sample Size | 0.250 | | | |
| Size Unit-Basis | NA | | | |
| Units | ng/L | MDL | LOD | LOQ |
| PFBA | 0.50 U | 0.14 | 0.50 | 5.00 |
| PFHxA | 0.50 U | 0.19 | 0.50 | 5.00 |
| PFHpA | 0.50 U | 0.16 | 0.50 | 5.00 |
| PFOA | 0.50 U | 0.18 | 0.50 | 5.00 |
| PFNA | 1.00 U | 0.26 | 1.00 | 5.00 |
| PFDA | 0.50 U | 0.16 | 0.50 | 5.00 |
| PFUnA | 1.00 U | 0.29 | 1.00 | 5.00 |
| PFDoA | 0.50 U | 0.18 | 0.50 | 5.00 |
| PFTrDA | 0.50 U | 0.15 | 0.50 | 5.00 |
| PFTeDA | 1.00 U | 0.25 | 1.00 | 5.00 |
| NMeFOSAA | 2.00 U | 0.56 | 2.00 | 5.00 |
| NEtFOSAA | 1.00 U | 0.49 | 1.00 | 5.00 |
| PFBS | 0.50 U | 0.13 | 0.50 | 5.00 |
| PFHxS | 0.40 U | 0.11 | 0.40 | 5.00 |
| PFOS | 0.50 U | 0.19 | 0.50 | 5.00 |
| ***Surrogate Recoveries (%)*** | | | | |
| 13C4-PFBA | 103 | | | |
| 13C5-PFHxA | 101 | | | |
| 13C4-PFHpA | 100 | | | |
| 13C8-PFOA | 106 | | | |
| 13C9-PFNA | 99 | | | |
| 13C6-PFDA | 111 | | | |
| 13C7-PFUnA | 103 | | | |
| 13C2-PFDoA | 108 | | | |
| 13C2-PFTeDA | 99 | | | |
| d3-MeFOSAA | 101 | | | |
| d5-EtFOSAA | 123 | | | |
| 13C3-PFBS | 100 | | | |
| 13C3-PFHxS | 99 | | | |
| 13C8-PFOS | 103 | | | |

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

| Client ID | JY46 IB | | | |
|---|---|---|---|---|
| Battelle ID | JY46 IB_08/28/2018 | affects sample CCC-GW-01 only | | |
| Sample Type | IB | | | |
| Collection Date | NA | | | |
| Extraction Date | NA | | | |
| Analysis Date | 08/28/2018 | | | |
| Analytical Instrument | Sciex 5500 LC/MS/MS | | | |
| % Moisture | NA | | | |
| Matrix | Water | | | |
| Sample Size | 0.250 | | | |
| Size Unit-Basis | NA | | | |
| Units | ng/L | MDL | LOD | LOQ |
| PFBA | 0.20 J | 0.14 | 0.50 | 5.00 |
| PFHxA | 0.50 U | 0.19 | 0.50 | 5.00 |
| PFHpA | 0.50 U | 0.16 | 0.50 | 5.00 |
| PFOA | 0.50 U | 0.18 | 0.50 | 5.00 |
| PFNA | 1.00 U | 0.26 | 1.00 | 5.00 |
| PFDA | 0.50 U | 0.16 | 0.50 | 5.00 |
| PFUnA | 1.00 U | 0.29 | 1.00 | 5.00 |
| PFDoA | 0.50 U | 0.18 | 0.50 | 5.00 |
| PFTrDA | 0.50 U | 0.15 | 0.50 | 5.00 |
| PFTeDA | 1.00 U | 0.25 | 1.00 | 5.00 |
| NMeFOSAA | 2.00 U | 0.56 | 2.00 | 5.00 |
| NEtFOSAA | 1.00 U | 0.49 | 1.00 | 5.00 |
| PFBS | 0.50 U | 0.13 | 0.50 | 5.00 |
| PFHxS | 0.40 U | 0.11 | 0.40 | 5.00 |
| PFOS | 0.50 U | 0.19 | 0.50 | 5.00 |

| ***Surrogate Recoveries (%)*** | |
|---|---|
| 13C4-PFBA | 94 |
| 13C5-PFHxA | 100 |
| 13C4-PFHpA | 99 |
| 13C8-PFOA | 107 |
| 13C9-PFNA | 104 |
| 13C6-PFDA | 107 |
| 13C7-PFUnA | 106 |
| 13C2-PFDoA | 97 |
| 13C2-PFTeDA | 97 |
| d3-MeFOSAA | 89 |
| d5-EtFOSAA | 111 |
| 13C3-PFBS | 87 |
| 13C3-PFHxS | 100 |
| 13C8-PFOS | 108 |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

| Client ID | Procedural Blank | | | |
|---|---|---|---|---|
| Battelle ID | CR552PB-FS | | | |
| Sample Type | PB | | | |
| Collection Date | 08/15/2018 | | | |
| Extraction Date | 08/15/2018 | | | |
| Analysis Date | 08/25/2018 | | | |
| Analytical Instrument | Sciex 5500 LC/MS/MS | | | |
| % Moisture | NA | | | |
| Matrix | WATER | | | |
| Sample Size | 0.250 | | | |
| Size Unit-Basis | L | | | |
| Units | ng/L | MDL | LOD | LOQ |
| PFBA | 0.21 J | 0.14 | 0.50 | 5.00 |
| PFHxA | 1.89 J | 0.19 | 0.50 | 5.00 |
| PFHpA | 0.50 U | 0.16 | 0.50 | 5.00 |
| PFOA | 1.21 J | 0.18 | 0.50 | 5.00 |
| PFNA | 1.00 U | 0.26 | 1.00 | 5.00 |
| PFDA | 0.50 U | 0.16 | 0.50 | 5.00 |
| PFUnA | 1.00 U | 0.29 | 1.00 | 5.00 |
| PFDoA | 0.50 U | 0.18 | 0.50 | 5.00 |
| PFTrDA | 0.50 U | 0.15 | 0.50 | 5.00 |
| PFTeDA | 1.00 U | 0.25 | 1.00 | 5.00 |
| NMeFOSAA | 2.00 U | 0.56 | 2.00 | 5.00 |
| NEtFOSAA | 1.00 U | 0.49 | 1.00 | 5.00 |
| PFBS | 0.50 U | 0.13 | 0.50 | 5.00 |
| PFHxS | 0.40 U | 0.11 | 0.40 | 5.00 |
| PFOS | 0.60 J | 0.19 | 0.50 | 5.00 |

***Surrogate Recoveries (%)***

| | |
|---|---|
| 13C4-PFBA | 132 |
| 13C5-PFHxA | 131 |
| 13C4-PFHpA | 133 |
| 13C8-PFOA | 137 |
| 13C9-PFNA | 136 |
| 13C6-PFDA | 139 |
| 13C7-PFUnA | 139 |
| 13C2-PFDoA | 122 |
| 13C2-PFTeDA | 112 |
| d3-MeFOSAA | 122 |
| d5-EtFOSAA | 146 |
| 13C3-PFBS | 135 |
| 13C3-PFHxS | 139 |
| 13C8-PFOS | 128 |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

| Client ID | Laboratory Control Sample | | | | | |
|---|---|---|---|---|---|---|
| Battelle ID | CR553LCS-FS | | | | | |
| Sample Type | LCS | | | | | |
| Collection Date | 08/15/2018 | | | | | |
| Extraction Date | 08/15/2018 | | | | | |
| Analysis Date | 08/25/2018 | | | | | |
| Analytical Instrument | Sciex 5500 LC/MS/MS | | | | | |
| % Moisture | NA | | | | | |
| Matrix | WATER | | | | | |
| Sample Size | 0.250 | | | | | |
| Size Unit-Basis | L | | | | Control Limits | |
| Units | ng/L | Target | Recovery | Qual | Lower | Upper |
| PFBA | 11.04 | 10.00 | 110 | | 61 | 139 |
| PFHxA | 12.61 B | 10.10 | 125 | | 51 | 137 |
| PFHpA | 11.00 | 10.00 | 110 | | 48 | 136 |
| PFOA | 12.27 | 10.00 | 123 | | 49 | 141 |
| PFNA | 10.13 | 10.00 | 101 | | 58 | 122 |
| PFDA | 10.01 | 10.00 | 100 | | 59 | 135 |
| PFUnA | 9.37 | 10.00 | 94 | | 64 | 134 |
| PFDoA | 10.26 | 10.00 | 103 | | 75 | 131 |
| PFTrDA | 10.28 | 10.00 | 103 | | 42 | 148 |
| PFTeDA | 10.59 | 10.00 | 106 | | 42 | 158 |
| NMeFOSAA | 11.05 | 10.00 | 111 | | 50 | 146 |
| NEtFOSAA | 10.77 | 10.00 | 108 | | 51 | 131 |
| PFBS | 10.26 | 10.10 | 102 | | 56 | 134 |
| PFHxS | 9.81 | 10.10 | 97 | | 52 | 128 |
| PFOS | 9.68 | 10.00 | 97 | | 40 | 144 |

***Surrogate Recoveries (%)***

| | |
|---|---|
| 13C4-PFBA | 88 |
| 13C5-PFHxA | 105 |
| 13C4-PFHpA | 102 |
| 13C8-PFOA | 96 |
| 13C9-PFNA | 106 |
| 13C6-PFDA | 123 |
| 13C7-PFUnA | 119 |
| 13C2-PFDoA | 115 |
| 13C2-PFTeDA | 105 |
| d3-MeFOSAA | 108 |
| d5-EtFOSAA | 101 |
| 13C3-PFBS | 101 |
| 13C3-PFHxS | 106 |
| 13C8-PFOS | 116 |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

| Client ID | NASB-BLL15-GW-01-0818 | NASB-BLL15-GW-01-0818 | | | | | |
|---|---|---|---|---|---|---|---|
| Battelle ID | J7397-FS | J7397MS-FS | | | | | |
| Sample Type | SA | MS | | | | | |
| Collection Date | 08/09/2018 | 08/09/2018 | | | | | |
| Extraction Date | 08/15/2018 | 08/15/2018 | | | | | |
| Analysis Date | 08/25/2018 | 08/25/2018 | | | | | |
| Analytical Instrument | Sciex 5500 LC/MS/MS | Sciex 5500 LC/MS/MS | | | | | |
| % Moisture | NA | NA | | | | | |
| Matrix | GW | GW | | | | | |
| Sample Size | 0.260 | 0.260 | | | | | |
| Size Unit-Basis | L | L | | | | Control Limits | |
| Units | ng/L | ng/L | Target | Recovery | Qual | Lower | Upper |
| PFBA | 57.74 | 85.96 | 28.85 | 98 | | 61 | 139 |
| PFHxA | 3.47 J | 30.85 | 29.13 | 94 | | 51 | 137 |
| PFHpA | 1.90 J | 30.50 | 28.85 | 99 | | 48 | 136 |
| PFOA | 6.81 B | 31.78 | 28.85 | 87 | | 49 | 141 |
| PFNA | 0.41 J | 28.62 | 28.85 | 98 | | 58 | 122 |
| PFDA | 0.48 U | 28.54 | 28.85 | 99 | | 59 | 135 |
| PFUnA | 0.96 U | 26.03 | 28.85 | 90 | | 64 | 134 |
| PFDoA | 0.48 U | 28.08 | 28.85 | 97 | | 75 | 131 |
| PFTrDA | 0.48 U | 34.42 | 28.85 | 119 | | 42 | 148 |
| PFTeDA | 0.96 U | 29.03 | 28.85 | 101 | | 42 | 158 |
| NMeFOSAA | 1.92 U | 31.14 | 28.85 | 108 | | 50 | 146 |
| NEtFOSAA | 0.96 U | 31.01 | 28.85 | 108 | | 51 | 131 |
| PFBS | 3.10 J | 31.13 | 29.13 | 96 | | 56 | 134 |
| PFHxS | 12.63 | 43.11 | 29.13 | 105 | | 52 | 128 |
| PFOS | 3.30 J | 34.71 | 28.85 | 109 | | 40 | 144 |
| ***Surrogate Recoveries (%)*** | | | | | | | |
| 13C4-PFBA | 8 N | 7 N | | | | | |
| 13C5-PFHxA | 112 | 95 | | | | | |
| 13C4-PFHpA | 126 | 108 | | | | | |
| 13C8-PFOA | 102 | 88 | | | | | |
| 13C9-PFNA | 104 | 85 | | | | | |
| 13C6-PFDA | 99 | 80 | | | | | |
| 13C7-PFUnA | 91 | 76 | | | | | |
| 13C2-PFDoA | 73 | 67 | | | | | |
| 13C2-PFTeDA | 43 N | 43 N | | | | | |
| d3-MeFOSAA | 95 | 94 | | | | | |
| d5-EtFOSAA | 78 | 75 | | | | | |
| 13C3-PFBS | 100 | 99 | | | | | |
| 13C3-PFHxS | 128 | 119 | | | | | |
| 13C8-PFOS | 95 | 88 | | | | | |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

| | |
|---|---|
| Client ID | NASB-BLL15-GW-01-0818 |
| Battelle ID | J7397MSD-FS |
| Sample Type | MSD |
| Collection Date | 08/09/2018 |
| Extraction Date | 08/15/2018 |
| Analysis Date | 08/25/2018 |
| Analytical Instrument | Sciex 5500 LC/MS/MS |
| % Moisture | NA |
| Matrix | GW |
| Sample Size | 0.255 |
| Size Unit-Basis | L |

| | | | | | Control Limits | | | | RPD |
|---|---|---|---|---|---|---|---|---|---|
| Units | ng/L | Target | Recovery | Qual | Lower | Upper | RPD | Qual | Limit |
| PFBA | 91.78 | 29.41 | 116 | | 61 | 139 | 16.8 | | ≤ 30 |
| PFHxA | 34.07 | 29.71 | 103 | | 51 | 137 | 9.1 | | ≤ 30 |
| PFHpA | 30.76 | 29.41 | 98 | | 48 | 136 | 1.0 | | ≤ 30 |
| PFOA | 33.91 | 29.41 | 92 | | 49 | 141 | 5.6 | | ≤ 30 |
| PFNA | 29.73 | 29.41 | 100 | | 58 | 122 | 2.0 | | ≤ 30 |
| PFDA | 27.34 | 29.41 | 93 | | 59 | 135 | 6.3 | | ≤ 30 |
| PFUnA | 24.63 | 29.41 | 84 | | 64 | 134 | 6.9 | | ≤ 30 |
| PFDoA | 31.53 | 29.41 | 107 | | 75 | 131 | 9.8 | | ≤ 30 |
| PFTrDA | 33.65 | 29.41 | 114 | | 42 | 148 | 4.3 | | ≤ 30 |
| PFTeDA | 29.44 | 29.41 | 100 | | 42 | 158 | 1.0 | | ≤ 30 |
| NMeFOSAA | 34.17 | 29.41 | 116 | | 50 | 146 | 7.1 | | ≤ 30 |
| NEtFOSAA | 31.69 | 29.41 | 108 | | 51 | 131 | 0.0 | | ≤ 30 |
| PFBS | 33.05 | 29.71 | 101 | | 56 | 134 | 5.1 | | ≤ 30 |
| PFHxS | 37.36 | 29.71 | 83 | | 52 | 128 | 23.4 | | ≤ 30 |
| PFOS | 33.19 | 29.41 | 102 | | 40 | 144 | 6.6 | | ≤ 30 |

***Surrogate Recoveries (%)***

| | | |
|---|---|---|
| 13C4-PFBA | 7 | N |
| 13C5-PFHxA | 81 | |
| 13C4-PFHpA | 96 | |
| 13C8-PFOA | 81 | |
| 13C9-PFNA | 80 | |
| 13C6-PFDA | 85 | |
| 13C7-PFUnA | 85 | |
| 13C2-PFDoA | 68 | |
| 13C2-PFTeDA | 48 | N |
| d3-MeFOSAA | 80 | |
| d5-EtFOSAA | 69 | |
| 13C3-PFBS | 76 | |
| 13C3-PFHxS | 112 | |
| 13C8-PFOS | 81 | |

BATTELLE
It can be done

Glossary of Data Qualifiers

| Flag: | Application: |
|---|---|
| B | Analyte found in the sample at a concentration <10x the level found in the procedural blank |
| D | Dilution Run. Initial run outside the initial calibration range of the instrument |
| E | Estimate, result is greater than the highers concentration level in the calibration |
| H | Surrogate diluted out. Used when surrogate recovery is affected by excessive dilution of the sample extract. |
| J | Analyte detected below the Limit of Quantitation (LOQ) |
| ME | Significant Matrix Interference - Estimated value. |
| MI | Significant Matrix Interference - value could not be determined. |
| n | Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO), but meets secondary criteria |
| N | Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO) |
| NA | Not Applicable |
| T | Holding Time (HT) exceeded |
| U | Analyte not detected or detected below the Method detection limit (MDL) value, Limit of Detection (LOD) reported |

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21
Preparation Batch: 18-0500
Data Set: DP-18-0217

| | CR552PB-FS (Procedural Blank) | CR553LCS-FS (Laboratory Control Sample) | J7397MS-FS (NASB-BLL15-GW-01-0818) | J7397MSD-FS (NASB-BLL15-GW-01-0818) | J7394-FS (NASB-CCC-GW-01-0818) | J7395-FS (NASB-CCC-GW-02-0818) | J7396-FS (NASB-BLL15-GW-02-0818) | J7397-FS (NASB-BLL15-GW-01-0818) |
|---|---|---|---|---|---|---|---|---|
| PFBA | L | L | L | L | L | L | L | L |
| PFHxA | L | L | L | L | L | L | L | L |
| PFHpA | - | L | L | L | L | L | L | L |
| PFOA | L | L | L | L | L | L | L | L |
| PFNA | - | L | L | L | L | L | L | L |
| PFDA | - | L | L | L | L | - | - | - |
| PFUnA | - | L | L | L | - | - | - | - |
| PFDoA | - | L | L | L | - | - | - | - |
| PFTrDA | - | L | L | L | - | - | - | - |
| PFTeDA | - | L | L | L | - | - | - | - |
| NMeFOSAA | - | L | L | L | - | - | - | - |
| NEtFOSAA | - | L | L | L | - | - | - | - |
| PFBS | - | L | L | L | L | L | L | L |
| PFHxS | - | L/Br | L/Br | L/Br | L/Br | L/Br | L/Br | L/Br |
| PFOS | L | L/Br | L/Br | L/Br | L/Br | L/Br | L/Br | L/Br |

"L" :Linear
"Br": branched
"L/Br": Linear/Branched
"-": Not detected

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21
Preparation Batch: 18-0500
Data Set: DP-18-0217

| | J7398-FS (NASB-BLL15-DUP-080918) | J7399-FS (NASB-BLL15-GW-03-0818) | J7400-FS (NASB-BLL15-GW-04-0818) | J7402-FS (NASB-BLL15-GW-RB01-080918) |
|---|---|---|---|---|
| PFBA | L | L | L | - |
| PFHxA | L | L | L | L |
| PFHpA | L | L | L | L |
| PFOA | L | L | L | L |
| PFNA | L | L | L | - |
| PFDA | - | - | - | - |
| PFUnA | - | - | - | - |
| PFDoA | - | - | - | - |
| PFTrDA | - | - | - | - |
| PFTeDA | - | - | - | - |
| NMeFOSAA | - | - | - | - |
| NEtFOSAA | - | - | - | - |
| PFBS | L | L | L | - |
| PFHxS | L/Br | L/Br | L/Br | L/Br |
| PFOS | L/Br | L/Br | L/Br | L/Br |

"L" :Linear
"Br": branched
"L/Br": Linear/Branched
"-": Not detected

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper |
|---|---|---|---|---|---|---|
| JY42 | L5 | 8/24/18 23:20 | 13C3-PFBA | 62,099.81 | 31,049.91 | 93,149.72 |

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper | Qualifier |
|---|---|---|---|---|---|---|---|
| JY38 | L1 | 8/24/18 22:36 | 13C3-PFBA | 55,737.70 | 31,049.91 | 93,149.72 | |
| JY39 | L2 | 8/24/18 22:47 | 13C3-PFBA | 54,856.95 | 31,049.91 | 93,149.72 | |
| JY40 | L3 | 8/24/18 22:58 | 13C3-PFBA | 57,614.29 | 31,049.91 | 93,149.72 | |
| JY41 | L4 | 8/24/18 23:09 | 13C3-PFBA | 57,883.97 | 31,049.91 | 93,149.72 | |
| JY42 | L5 | 8/24/18 23:20 | 13C3-PFBA | 62,099.81 | 31,049.91 | 93,149.72 | |
| JY43 | L6 | 8/24/18 23:31 | 13C3-PFBA | 58,707.76 | 31,049.91 | 93,149.72 | |
| JY44 | L7 | 8/24/18 23:42 | 13C3-PFBA | 56,480.01 | 31,049.91 | 93,149.72 | |
| JY46 IB | Instrument Blank | 8/24/18 23:53 | 13C3-PFBA | 55,663.08 | 31,049.91 | 93,149.72 | |
| JY45 ICC | ICC | 8/25/18 0:03 | 13C3-PFBA | 59,885.14 | 31,049.91 | 93,149.72 | |
| CR552PB-FS(3) | Procedural Blank | 8/25/18 4:46 | 13C3-PFBA | 39,560.86 | 31,049.91 | 93,149.72 | |
| CR553LCS-FS(3) | Laboratory Control Sample | 8/25/18 4:57 | 13C3-PFBA | 55,753.46 | 31,049.91 | 93,149.72 | |
| J7402-FS(3) | NASB-BLL15-GW-RB01-080918 | 8/25/18 5:08 | 13C3-PFBA | 55,148.70 | 31,049.91 | 93,149.72 | |
| J7394-FS(3) | NASB-CCC-GW-01-0818 | 8/25/18 5:19 | 13C3-PFBA | 10,273.60 | 31,049.91 | 93,149.72 | N |
| J7395-FS(3) | NASB-CCC-GW-02-0818 | 8/25/18 5:30 | 13C3-PFBA | 47,502.78 | 31,049.91 | 93,149.72 | |
| J7396-FS(3) | NASB-BLL15-GW-02-0818 | 8/25/18 5:41 | 13C3-PFBA | 37,713.82 | 31,049.91 | 93,149.72 | |
| JY42 CCV | CCV | 8/25/18 6:02 | 13C3-PFBA | 54,530.51 | 31,049.91 | 93,149.72 | |
| J7397-FS(3) | NASB-BLL15-GW-01-0818 | 8/25/18 6:24 | 13C3-PFBA | 173,257.35 | 31,049.91 | 93,149.72 | N |
| J7397MS-FS(3) | Matrix Spike Sample | 8/25/18 6:35 | 13C3-PFBA | 192,682.81 | 31,049.91 | 93,149.72 | N |
| J7397MSD-FS(3) | Matrix Spike Duplicate Sample | 8/25/18 6:46 | 13C3-PFBA | 195,651.07 | 31,049.91 | 93,149.72 | N |
| J7398-FS(3) | NASB-BLL15-DUP-080918 | 8/25/18 6:57 | 13C3-PFBA | 168,448.12 | 31,049.91 | 93,149.72 | N |
| J7399-FS(3) | NASB-BLL15-GW-03-0818 | 8/25/18 7:08 | 13C3-PFBA | 101,986.13 | 31,049.91 | 93,149.72 | N |
| J7400-FS(3) | NASB-BLL15-GW-04-0818 | 8/25/18 7:18 | 13C3-PFBA | 68,374.98 | 31,049.91 | 93,149.72 | |
| JY41 CCV | CCV | 8/25/18 7:40 | 13C3-PFBA | 52,177.80 | 31,049.91 | 93,149.72 | |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper |
|---|---|---|---|---|---|---|
| JY42 | L5 | 8/24/18 23:20 | 13C2-PFOA | 92,608.08 | 46,304.04 | 138,912.12 |

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper | Qualifier |
|---|---|---|---|---|---|---|---|
| JY38 | L1 | 8/24/18 22:36 | 13C2-PFOA | 89,686.34 | 46,304.04 | 138,912.12 | |
| JY39 | L2 | 8/24/18 22:47 | 13C2-PFOA | 90,381.96 | 46,304.04 | 138,912.12 | |
| JY40 | L3 | 8/24/18 22:58 | 13C2-PFOA | 87,326.72 | 46,304.04 | 138,912.12 | |
| JY41 | L4 | 8/24/18 23:09 | 13C2-PFOA | 89,865.42 | 46,304.04 | 138,912.12 | |
| JY42 | L5 | 8/24/18 23:20 | 13C2-PFOA | 92,608.08 | 46,304.04 | 138,912.12 | |
| JY43 | L6 | 8/24/18 23:31 | 13C2-PFOA | 91,795.08 | 46,304.04 | 138,912.12 | |
| JY44 | L7 | 8/24/18 23:42 | 13C2-PFOA | 91,050.54 | 46,304.04 | 138,912.12 | |
| JY46 IB | Instrument Blank | 8/24/18 23:53 | 13C2-PFOA | 86,993.18 | 46,304.04 | 138,912.12 | |
| JY45 ICC | ICC | 8/25/18 0:03 | 13C2-PFOA | 94,996.84 | 46,304.04 | 138,912.12 | |
| CR552PB-FS(3) | Procedural Blank | 8/25/18 4:46 | 13C2-PFOA | 61,640.47 | 46,304.04 | 138,912.12 | |
| CR553LCS-FS(3) | Laboratory Control Sample | 8/25/18 4:57 | 13C2-PFOA | 73,989.36 | 46,304.04 | 138,912.12 | |
| J7402-FS(3) | NASB-BLL15-GW-RB01-080918 | 8/25/18 5:08 | 13C2-PFOA | 79,568.13 | 46,304.04 | 138,912.12 | |
| J7394-FS(3) | NASB-CCC-GW-01-0818 | 8/25/18 5:19 | 13C2-PFOA | 16,178.63 | 46,304.04 | 138,912.12 | N |
| J7395-FS(3) | NASB-CCC-GW-02-0818 | 8/25/18 5:30 | 13C2-PFOA | 78,894.96 | 46,304.04 | 138,912.12 | |
| J7396-FS(3) | NASB-BLL15-GW-02-0818 | 8/25/18 5:41 | 13C2-PFOA | 62,008.69 | 46,304.04 | 138,912.12 | |
| JY42 CCV | CCV | 8/25/18 6:02 | 13C2-PFOA | 82,508.65 | 46,304.04 | 138,912.12 | |
| J7397-FS(3) | NASB-BLL15-GW-01-0818 | 8/25/18 6:24 | 13C2-PFOA | 58,674.53 | 46,304.04 | 138,912.12 | |
| J7397MS-FS(3) | Matrix Spike Sample | 8/25/18 6:35 | 13C2-PFOA | 74,066.12 | 46,304.04 | 138,912.12 | |
| J7397MSD-FS(3) | Matrix Spike Duplicate Sample | 8/25/18 6:46 | 13C2-PFOA | 87,164.02 | 46,304.04 | 138,912.12 | |
| J7398-FS(3) | NASB-BLL15-DUP-080918 | 8/25/18 6:57 | 13C2-PFOA | 67,737.02 | 46,304.04 | 138,912.12 | |
| J7399-FS(3) | NASB-BLL15-GW-03-0818 | 8/25/18 7:08 | 13C2-PFOA | 65,277.04 | 46,304.04 | 138,912.12 | |
| J7400-FS(3) | NASB-BLL15-GW-04-0818 | 8/25/18 7:18 | 13C2-PFOA | 66,198.76 | 46,304.04 | 138,912.12 | |
| JY41 CCV | CCV | 8/25/18 7:40 | 13C2-PFOA | 77,497.71 | 46,304.04 | 138,912.12 | |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper |
|---|---|---|---|---|---|---|
| JY42 | L5 | 8/24/18 23:20 | 13C2-PFDA | 105,936.28 | 52,968.14 | 158,904.42 |

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper | Qualifier |
|---|---|---|---|---|---|---|---|
| JY38 | L1 | 8/24/18 22:36 | 13C2-PFDA | 101,703.93 | 52,968.14 | 158,904.42 | |
| JY39 | L2 | 8/24/18 22:47 | 13C2-PFDA | 104,669.39 | 52,968.14 | 158,904.42 | |
| JY40 | L3 | 8/24/18 22:58 | 13C2-PFDA | 99,261.32 | 52,968.14 | 158,904.42 | |
| JY41 | L4 | 8/24/18 23:09 | 13C2-PFDA | 100,506.14 | 52,968.14 | 158,904.42 | |
| JY42 | L5 | 8/24/18 23:20 | 13C2-PFDA | 105,936.28 | 52,968.14 | 158,904.42 | |
| JY43 | L6 | 8/24/18 23:31 | 13C2-PFDA | 113,124.25 | 52,968.14 | 158,904.42 | |
| JY44 | L7 | 8/24/18 23:42 | 13C2-PFDA | 103,798.12 | 52,968.14 | 158,904.42 | |
| JY46 IB | Instrument Blank | 8/24/18 23:53 | 13C2-PFDA | 98,444.02 | 52,968.14 | 158,904.42 | |
| JY45 ICC | ICC | 8/25/18 0:03 | 13C2-PFDA | 113,766.69 | 52,968.14 | 158,904.42 | |
| CR552PB-FS(3) | Procedural Blank | 8/25/18 4:46 | 13C2-PFDA | 69,525.37 | 52,968.14 | 158,904.42 | |
| CR553LCS-FS(3) | Laboratory Control Sample | 8/25/18 4:57 | 13C2-PFDA | 78,542.82 | 52,968.14 | 158,904.42 | |
| J7402-FS(3) | NASB-BLL15-GW-RB01-080918 | 8/25/18 5:08 | 13C2-PFDA | 92,715.53 | 52,968.14 | 158,904.42 | |
| J7394-FS(3) | NASB-CCC-GW-01-0818 | 8/25/18 5:19 | 13C2-PFDA | 17,532.80 | 52,968.14 | 158,904.42 | N |
| J7395-FS(3) | NASB-CCC-GW-02-0818 | 8/25/18 5:30 | 13C2-PFDA | 85,960.93 | 52,968.14 | 158,904.42 | |
| J7396-FS(3) | NASB-BLL15-GW-02-0818 | 8/25/18 5:41 | 13C2-PFDA | 77,585.56 | 52,968.14 | 158,904.42 | |
| JY42 CCV | CCV | 8/25/18 6:02 | 13C2-PFDA | 90,676.97 | 52,968.14 | 158,904.42 | |
| J7397-FS(3) | NASB-BLL15-GW-01-0818 | 8/25/18 6:24 | 13C2-PFDA | 68,663.42 | 52,968.14 | 158,904.42 | |
| J7397MS-FS(3) | Matrix Spike Sample | 8/25/18 6:35 | 13C2-PFDA | 86,049.09 | 52,968.14 | 158,904.42 | |
| J7397MSD-FS(3) | Matrix Spike Duplicate Sample | 8/25/18 6:46 | 13C2-PFDA | 99,733.95 | 52,968.14 | 158,904.42 | |
| J7398-FS(3) | NASB-BLL15-DUP-080918 | 8/25/18 6:57 | 13C2-PFDA | 81,245.71 | 52,968.14 | 158,904.42 | |
| J7399-FS(3) | NASB-BLL15-GW-03-0818 | 8/25/18 7:08 | 13C2-PFDA | 81,268.83 | 52,968.14 | 158,904.42 | |
| J7400-FS(3) | NASB-BLL15-GW-04-0818 | 8/25/18 7:18 | 13C2-PFDA | 81,919.89 | 52,968.14 | 158,904.42 | |
| JY41 CCV | CCV | 8/25/18 7:40 | 13C2-PFDA | 87,962.69 | 52,968.14 | 158,904.42 | |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper |
|---|---|---|---|---|---|---|
| JY42 | L5 | 8/24/18 23:20 | 13C4-PFOS | 32,248.02 | 16,124.01 | 48,372.03 |

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper | Qualifier |
|---|---|---|---|---|---|---|---|
| JY38 | L1 | 8/24/18 22:36 | 13C4-PFOS | 33,175.18 | 16,124.01 | 48,372.03 | |
| JY39 | L2 | 8/24/18 22:47 | 13C4-PFOS | 31,211.04 | 16,124.01 | 48,372.03 | |
| JY40 | L3 | 8/24/18 22:58 | 13C4-PFOS | 31,393.82 | 16,124.01 | 48,372.03 | |
| JY41 | L4 | 8/24/18 23:09 | 13C4-PFOS | 31,692.96 | 16,124.01 | 48,372.03 | |
| JY42 | L5 | 8/24/18 23:20 | 13C4-PFOS | 32,248.02 | 16,124.01 | 48,372.03 | |
| JY43 | L6 | 8/24/18 23:31 | 13C4-PFOS | 32,619.41 | 16,124.01 | 48,372.03 | |
| JY44 | L7 | 8/24/18 23:42 | 13C4-PFOS | 28,605.63 | 16,124.01 | 48,372.03 | |
| JY46 IB | Instrument Blank | 8/24/18 23:53 | 13C4-PFOS | 30,847.94 | 16,124.01 | 48,372.03 | |
| JY45 ICC | ICC | 8/25/18 0:03 | 13C4-PFOS | 37,275.00 | 16,124.01 | 48,372.03 | |
| CR552PB-FS(3) | Procedural Blank | 8/25/18 4:46 | 13C4-PFOS | 19,734.44 | 16,124.01 | 48,372.03 | |
| CR553LCS-FS(3) | Laboratory Control Sample | 8/25/18 4:57 | 13C4-PFOS | 25,543.65 | 16,124.01 | 48,372.03 | |
| J7402-FS(3) | NASB-BLL15-GW-RB01-080918 | 8/25/18 5:08 | 13C4-PFOS | 28,797.12 | 16,124.01 | 48,372.03 | |
| J7394-FS(3) | NASB-CCC-GW-01-0818 | 8/25/18 5:19 | 13C4-PFOS | 5,918.75 | 16,124.01 | 48,372.03 | N |
| J7395-FS(3) | NASB-CCC-GW-02-0818 | 8/25/18 5:30 | 13C4-PFOS | 26,519.64 | 16,124.01 | 48,372.03 | |
| J7396-FS(3) | NASB-BLL15-GW-02-0818 | 8/25/18 5:41 | 13C4-PFOS | 19,254.63 | 16,124.01 | 48,372.03 | |
| JY42 CCV | CCV | 8/25/18 6:02 | 13C4-PFOS | 29,425.91 | 16,124.01 | 48,372.03 | |
| J7397-FS(3) | NASB-BLL15-GW-01-0818 | 8/25/18 6:24 | 13C4-PFOS | 18,517.23 | 16,124.01 | 48,372.03 | |
| J7397MS-FS(3) | Matrix Spike Sample | 8/25/18 6:35 | 13C4-PFOS | 20,046.86 | 16,124.01 | 48,372.03 | |
| J7397MSD-FS(3) | Matrix Spike Duplicate Sample | 8/25/18 6:46 | 13C4-PFOS | 26,463.71 | 16,124.01 | 48,372.03 | |
| J7398-FS(3) | NASB-BLL15-DUP-080918 | 8/25/18 6:57 | 13C4-PFOS | 22,238.46 | 16,124.01 | 48,372.03 | |
| J7399-FS(3) | NASB-BLL15-GW-03-0818 | 8/25/18 7:08 | 13C4-PFOS | 19,123.67 | 16,124.01 | 48,372.03 | |
| J7400-FS(3) | NASB-BLL15-GW-04-0818 | 8/25/18 7:18 | 13C4-PFOS | 19,104.92 | 16,124.01 | 48,372.03 | |
| JY41 CCV | CCV | 8/25/18 7:40 | 13C4-PFOS | 27,471.32 | 16,124.01 | 48,372.03 | |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper |
|---|---|---|---|---|---|---|
| JY42 | L5 | 8/28/18 20:48 | 13C3-PFBA | 51,124.18 | 25,562.09 | 76,686.27 |

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper | Qualifier |
|---|---|---|---|---|---|---|---|
| JY38 | L1 | 8/28/18 20:04 | 13C3-PFBA | 61,083.71 | 25,562.09 | 76,686.27 | |
| JY39 | L2 | 8/28/18 20:15 | 13C3-PFBA | 53,621.70 | 25,562.09 | 76,686.27 | |
| JY40 | L3 | 8/28/18 20:26 | 13C3-PFBA | 56,475.25 | 25,562.09 | 76,686.27 | |
| JY41 | L4 | 8/28/18 20:37 | 13C3-PFBA | 49,987.19 | 25,562.09 | 76,686.27 | |
| JY42 | L5 | 8/28/18 20:48 | 13C3-PFBA | 51,124.18 | 25,562.09 | 76,686.27 | |
| JY43 | L6 | 8/28/18 20:59 | 13C3-PFBA | 53,288.49 | 25,562.09 | 76,686.27 | |
| JY44 | L7 | 8/28/18 21:09 | 13C3-PFBA | 50,812.75 | 25,562.09 | 76,686.27 | |
| JY46 IB | Instrument Blank | 8/28/18 21:20 | 13C3-PFBA | 56,562.61 | 25,562.09 | 76,686.27 | |
| JY45 ICC | ICC | 8/28/18 21:31 | 13C3-PFBA | 50,669.86 | 25,562.09 | 76,686.27 | |
| JY41 CCV | CCV | 8/29/18 0:58 | 13C3-PFBA | 51,658.25 | 25,562.09 | 76,686.27 | |
| J7394-FS(3) | NASB-CCC-GW-01-0818 | 8/29/18 1:19 | 13C3-PFBA | 41,020.69 | 25,562.09 | 76,686.27 | |
| J7397-FS(3) | NASB-BLL15-GW-01-0818 | 8/29/18 1:30 | 13C3-PFBA | 160,906.49 | 25,562.09 | 76,686.27 | N |
| J7397MS-FS(3) | Matrix Spike Sample | 8/29/18 1:41 | 13C3-PFBA | 177,826.43 | 25,562.09 | 76,686.27 | N |
| J7397MSD-FS(3) | Matrix Spike Duplicate Sample | 8/29/18 1:52 | 13C3-PFBA | 185,117.74 | 25,562.09 | 76,686.27 | N |
| J7398-FS(3) | NASB-BLL15-DUP-080918 | 8/29/18 2:03 | 13C3-PFBA | 181,458.60 | 25,562.09 | 76,686.27 | N |
| J7399-FS(3) | NASB-BLL15-GW-03-0818 | 8/29/18 2:14 | 13C3-PFBA | 92,715.93 | 25,562.09 | 76,686.27 | N |
| J7400-FS(3) | NASB-BLL15-GW-04-0818 | 8/29/18 2:24 | 13C3-PFBA | 142,232.90 | 25,562.09 | 76,686.27 | N |
| JY42 CCV | CCV | 8/29/18 2:46 | 13C3-PFBA | 50,774.45 | 25,562.09 | 76,686.27 | |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper |
|---|---|---|---|---|---|---|
| JY42 | L5 | 8/28/18 20:48 | 13C2-PFOA | 70,686.29 | 35,343.15 | 106,029.44 |

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper | Qualifier |
|---|---|---|---|---|---|---|---|
| JY38 | L1 | 8/28/18 20:04 | 13C2-PFOA | 84,330.39 | 35,343.15 | 106,029.44 | |
| JY39 | L2 | 8/28/18 20:15 | 13C2-PFOA | 70,363.64 | 35,343.15 | 106,029.44 | |
| JY40 | L3 | 8/28/18 20:26 | 13C2-PFOA | 82,022.48 | 35,343.15 | 106,029.44 | |
| JY41 | L4 | 8/28/18 20:37 | 13C2-PFOA | 71,523.55 | 35,343.15 | 106,029.44 | |
| JY42 | L5 | 8/28/18 20:48 | 13C2-PFOA | 70,686.29 | 35,343.15 | 106,029.44 | |
| JY43 | L6 | 8/28/18 20:59 | 13C2-PFOA | 83,677.30 | 35,343.15 | 106,029.44 | |
| JY44 | L7 | 8/28/18 21:09 | 13C2-PFOA | 78,516.75 | 35,343.15 | 106,029.44 | |
| JY46 IB | Instrument Blank | 8/28/18 21:20 | 13C2-PFOA | 74,344.26 | 35,343.15 | 106,029.44 | |
| JY45 ICC | ICC | 8/28/18 21:31 | 13C2-PFOA | 75,529.88 | 35,343.15 | 106,029.44 | |
| JY41 CCV | CCV | 8/29/18 0:58 | 13C2-PFOA | 74,719.91 | 35,343.15 | 106,029.44 | |
| J7394-FS(3) | NASB-CCC-GW-01-0818 | 8/29/18 1:19 | 13C2-PFOA | 48,584.46 | 35,343.15 | 106,029.44 | |
| JY42 CCV | CCV | 8/29/18 2:46 | 13C2-PFOA | 83,329.18 | 35,343.15 | 106,029.44 | |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper |
|---|---|---|---|---|---|---|
| JY42 | L5 | 8/28/18 20:48 | 13C2-PFDA | 82,579.96 | 41,289.98 | 123,869.94 |

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper | Qualifier |
|---|---|---|---|---|---|---|---|
| JY38 | L1 | 8/28/18 20:04 | 13C2-PFDA | 97,894.02 | 41,289.98 | 123,869.94 | |
| JY39 | L2 | 8/28/18 20:15 | 13C2-PFDA | 79,143.80 | 41,289.98 | 123,869.94 | |
| JY40 | L3 | 8/28/18 20:26 | 13C2-PFDA | 94,637.43 | 41,289.98 | 123,869.94 | |
| JY41 | L4 | 8/28/18 20:37 | 13C2-PFDA | 79,399.67 | 41,289.98 | 123,869.94 | |
| JY42 | L5 | 8/28/18 20:48 | 13C2-PFDA | 82,579.96 | 41,289.98 | 123,869.94 | |
| JY43 | L6 | 8/28/18 20:59 | 13C2-PFDA | 86,460.00 | 41,289.98 | 123,869.94 | |
| JY44 | L7 | 8/28/18 21:09 | 13C2-PFDA | 94,107.95 | 41,289.98 | 123,869.94 | |
| JY46 IB | Instrument Blank | 8/28/18 21:20 | 13C2-PFDA | 83,546.56 | 41,289.98 | 123,869.94 | |
| JY45 ICC | ICC | 8/28/18 21:31 | 13C2-PFDA | 85,834.11 | 41,289.98 | 123,869.94 | |
| JY41 CCV | CCV | 8/29/18 0:58 | 13C2-PFDA | 87,991.97 | 41,289.98 | 123,869.94 | |
| J7394-FS(3) | NASB-CCC-GW-01-0818 | 8/29/18 1:19 | 13C2-PFDA | 56,339.76 | 41,289.98 | 123,869.94 | |
| JY42 CCV | CCV | 8/29/18 2:46 | 13C2-PFDA | 89,429.45 | 41,289.98 | 123,869.94 | |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper |
|---|---|---|---|---|---|---|
| JY42 | L5 | 8/28/18 20:48 | 13C4-PFOS | 30,907.19 | 15,453.60 | 46,360.79 |

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper | Qualifier |
|---|---|---|---|---|---|---|---|
| JY38 | L1 | 8/28/18 20:04 | 13C4-PFOS | 29,953.96 | 15,453.60 | 46,360.79 | |
| JY39 | L2 | 8/28/18 20:15 | 13C4-PFOS | 28,891.71 | 15,453.60 | 46,360.79 | |
| JY40 | L3 | 8/28/18 20:26 | 13C4-PFOS | 29,758.83 | 15,453.60 | 46,360.79 | |
| JY41 | L4 | 8/28/18 20:37 | 13C4-PFOS | 23,457.09 | 15,453.60 | 46,360.79 | |
| JY42 | L5 | 8/28/18 20:48 | 13C4-PFOS | 30,907.19 | 15,453.60 | 46,360.79 | |
| JY43 | L6 | 8/28/18 20:59 | 13C4-PFOS | 27,142.68 | 15,453.60 | 46,360.79 | |
| JY44 | L7 | 8/28/18 21:09 | 13C4-PFOS | 24,977.32 | 15,453.60 | 46,360.79 | |
| JY46 IB | Instrument Blank | 8/28/18 21:20 | 13C4-PFOS | 27,744.14 | 15,453.60 | 46,360.79 | |
| JY45 ICC | ICC | 8/28/18 21:31 | 13C4-PFOS | 27,304.48 | 15,453.60 | 46,360.79 | |
| JY41 CCV | CCV | 8/29/18 0:58 | 13C4-PFOS | 23,956.70 | 15,453.60 | 46,360.79 | |
| J7394-FS(3) | NASB-CCC-GW-01-0818 | 8/29/18 1:19 | 13C4-PFOS | 18,899.28 | 15,453.60 | 46,360.79 | |
| JY42 CCV | CCV | 8/29/18 2:46 | 13C4-PFOS | 27,975.91 | 15,453.60 | 46,360.79 | |

BATTELLE

Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 30/08/2018 2:25:03 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY44 | **Injection Vial** | 8 |
| **Sample ID** | L7 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 11:42:11 PM | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_A |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Spectra Acquisition Rate | Passing Range |
|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | 55 | >10 |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 51 | >10 |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 25 | >10 |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 26 | >10 |
| PFHpA_1 | 363.0 / 319.0 | 2.26 | 29 | >10 |
| PFHpA_2 | 363.0 / 169.0 | 2.26 | 30 | >10 |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | 48 | >10 |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | 46 | >10 |
| PFOA_1 | 413.0 / 369.0 | 2.66 | 34 | >10 |
| PFOA_2 | 413.0 / 169.0 | 2.66 | 36 | >10 |
| PFNA_1 | 463.0 / 419.0 | 3.05 | 33 | >10 |
| PFNA_2 | 463.0 / 219.0 | 3.05 | 31 | >10 |
| PFOS_1 | 499.0 / 80.0 | 3.04 | 49 | >10 |
| PFOS_2 | 499.0 / 99.0 | 3.04 | 52 | >10 |
| PFDA_1 | 513.0 / 469.0 | 3.40 | 46 | >10 |
| PFDA_2 | 513.0 / 219.0 | 3.40 | 39 | >10 |
| PFUnA_1 | 563.0 / 519.0 | 3.72 | 30 | >10 |
| PFUnA_2 | 563.0 / 269.0 | 3.72 | 57 | >10 |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | 32 | >10 |
| PFDoA_2 | 613.0 / 319.0 | 4.00 | 38 | >10 |
| PFTrDA_1 | 663.0 / 619.0 | 4.25 | 64 | >10 |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | 37 | >10 |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | 86 | >10 |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | 49 | >10 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.55 | 48 | >10 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.55 | 34 | >10 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.72 | 36 | >10 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.72 | 25 | >10 |
| PFBA | 213.0 / 169.0 | 1.16 | 40 | >10 |

BATTELLE

Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 30/08/2018 1:38:04 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY44 | **Injection Vial** | 8 |
| **Sample ID** | L7 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 11:42:11 PM | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_SIS_A |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Spectra Acquisition Rate | Passing Range |
|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.16 | 44 | >10 |
| 13C2-PFDoA | 615.0 / 570.0 | 3.99 | 41 | >10 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.55 | 35 | >10 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.71 | 23 | >10 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 37 | >10 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 37 | >10 |
| 13C8-PFOA | 421.0 / 376.0 | 2.65 | 34 | >10 |
| 13C9-PFNA | 472.0 / 427.0 | 3.03 | 35 | >10 |
| 13C6-PFDA | 519.0 / 474.0 | 3.38 | 33 | >10 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.71 | 37 | >10 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.46 | 42 | >10 |
| 13C3-PFBS | 302.0 / 99.0 | 1.53 | 33 | >10 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.27 | 33 | >10 |
| 13C8-PFOS | 507.0 / 99.0 | 3.03 | 25 | >10 |

BATTELLE

Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:01 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY44 | **Injection Vial** | 22 |
| **Sample ID** | L7 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 9:09:59 PM | **Data File** | 18-0511_18-0517.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_R |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Spectra Acquisition Rate | Passing Range |
|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.54 | 50 | >10 |
| PFBS_2 | 298.9 / 99.0 | 1.54 | 55 | >10 |
| PFHxA_1 | 313.0 / 269.0 | 1.85 | 25 | >10 |
| PFHxA_2 | 313.0 / 119.0 | 1.85 | 23 | >10 |
| PFHpA_1 | 363.0 / 319.0 | 2.25 | 30 | >10 |
| PFHpA_2 | 363.0 / 169.0 | 2.25 | 27 | >10 |
| PFHxS_1 | 399.0 / 80.0 | 2.27 | 52 | >10 |
| PFHxS_2 | 399.0 / 99.0 | 2.27 | 59 | >10 |
| PFOA_1 | 413.0 / 369.0 | 2.66 | 33 | >10 |
| PFOA_2 | 413.0 / 169.0 | 2.65 | 35 | >10 |
| PFNA_1 | 463.0 / 419.0 | 3.05 | 29 | >10 |
| PFNA_2 | 463.0 / 219.0 | 3.05 | 33 | >10 |
| PFOS_1 | 499.0 / 80.0 | 3.05 | 44 | >10 |
| PFOS_2 | 499.0 / 99.0 | 3.04 | 49 | >10 |
| PFDA_1 | 513.0 / 469.0 | 3.40 | 31 | >10 |
| PFDA_2 | 513.0 / 219.0 | 3.40 | 40 | >10 |
| PFUnA_1 | 563.0 / 519.0 | 3.71 | 30 | >10 |
| PFUnA_2 | 563.0 / 269.0 | 3.71 | 37 | >10 |
| PFDoA_1 | 613.0 / 569.0 | 4.00 | 63 | >10 |
| PFDoA_2 | 613.0 / 319.0 | 3.99 | 38 | >10 |
| PFTrDA_1 | 663.0 / 619.0 | 4.24 | 83 | >10 |
| PFTrDA_2 | 663.0 / 169.0 | 4.23 | 44 | >10 |
| PFTeDA_1 | 713.0 / 669.0 | 4.45 | 84 | >10 |
| PFTeDA_2 | 713.0 / 169.0 | 4.45 | 72 | >10 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.55 | 46 | >10 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.55 | 52 | >10 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.71 | 58 | >10 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.71 | 39 | >10 |
| PFBA | 213.0 / 169.0 | 1.14 | 45 | >10 |

BATTELLE

Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 30/08/2018 1:53:17 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY44 | **Injection Vial** | 22 |
| **Sample ID** | L7 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 9:09:59 PM | **Data File** | 18-0511_18-0517.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_SIS_R |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Spectra Acquisition Rate | Passing Range |
|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.15 | 38 | >10 |
| 13C2-PFDoA | 615.0 / 570.0 | 3.98 | 33 | >10 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.54 | 19 | >10 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.70 | 21 | >10 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.83 | 36 | >10 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.24 | 41 | >10 |
| 13C8-PFOA | 421.0 / 376.0 | 2.64 | 40 | >10 |
| 13C9-PFNA | 472.0 / 427.0 | 3.03 | 28 | >10 |
| 13C6-PFDA | 519.0 / 474.0 | 3.38 | 34 | >10 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.70 | 52 | >10 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.45 | 43 | >10 |
| 13C3-PFBS | 302.0 / 99.0 | 1.52 | 45 | >10 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.26 | 25 | >10 |
| 13C8-PFOS | 507.0 / 99.0 | 3.03 | 40 | >10 |

BATTELLE
It can be done

Precision and Bias at the LOQ for PFAS in non-potable Water

| Analyte | CAS No. | Average (ng/L) | ST DEV | 3 Sigma | n |
|---|---|---|---|---|---|
| PFBA | 375-22-4 | 12.40 | 2.18 | 6.54 | 11 |
| PFPeA | 2706-90-3 | 10.73 | 1.51 | 4.53 | 9 |
| PFHxA | 307-24-4 | 10.07 | 1.25 | 3.75 | 30 |
| PFHpA | 375-85-9 | 9.51 | 1.71 | 5.13 | 30 |
| PFOA | 335-67-1 | 10.06 | 1.60 | 4.80 | 31 |
| PFNA | 375-95-1 | 9.70 | 1.23 | 3.69 | 30 |
| PFDA | 335-76-2 | 10.04 | 1.43 | 4.29 | 30 |
| PFUnA | 2058-94-8 | 9.95 | 1.45 | 4.35 | 30 |
| PFDoA | 307-55-1 | 11.03 | 1.28 | 3.84 | 30 |
| PFTrDA | 72629-94-8 | 11.52 | 1.50 | 4.50 | 30 |
| PFTeDA | 376-06-7 | 10.92 | 2.07 | 6.21 | 30 |
| NMeFOSAA | 2355-31-9 | 10.21 | 2.04 | 6.12 | 30 |
| NEtFOSAA | 2991-50-6 | 9.60 | 1.70 | 5.10 | 30 |
| PFOSA | 754-91-6 | 9.74 | 1.14 | 3.42 | 3 |
| PFBS | 375-73-5 | 10.25 | 1.55 | 4.65 | 31 |
| PFPeS | BDO-2114 | 9.80 | 0.96 | 2.88 | 4 |
| PFHxS | 355-46-4 | 9.90 | 1.52 | 4.56 | 30 |
| PFHpS | 375-99-6 | 10.96 | 0.96 | 2.88 | 9 |
| PFOS | 1763-23-1 | 10.16 | 1.47 | 4.41 | 30 |
| PFNS | 98789-57-2 | 9.34 | 1.10 | 3.30 | 4 |
| PFDS | 2806-15-7 | 10.13 | 1.88 | 5.64 | 9 |
| 4:2FTS | BDO-2205 | 11.03 | 1.26 | 3.78 | 9 |
| 6:2FTS | 27619-97-2 | 12.52 | 2.91 | 8.73 | 9 |
| 8:2FTS | 39108-34-4 | 12.11 | 2.54 | 7.62 | 9 |

# BATTELLE DETECTION LIMITS FOR PFAS IN NON-POTABLE WATER

Analytical SOP 5-369
Extraction SOP 5-370

PFAS by LC-MS/MS Compliant with QSM 5.1 Compliant Table B-15

| Analyte | CAS No. | MDL (ng/L) | LOD (ng/L) | LOQ (ng/L) |
|---|---|---|---|---|
| ***PFBA*** | 375-22-4 | 0.14 | 0.5 | 5.0 |
| ***PFPeA*** | 2706-90-3 | 0.31 | 1.0 | 5.0 |
| ***PFHxA*** | 307-24-4 | 0.19 | 0.5 | 5.0 |
| ***PFHpA*** | 375-85-9 | 0.16 | 0.5 | 5.0 |
| ***PFOA*** | 335-67-1 | 0.18 | 0.5 | 5.0 |
| ***PFNA*** | 375-95-1 | 0.26 | 1.0 | 5.0 |
| ***PFDA*** | 335-76-2 | 0.16 | 0.5 | 5.0 |
| ***PFUnA*** | 2058-94-8 | 0.29 | 1.0 | 5.0 |
| ***PFDoA*** | 307-55-1 | 0.18 | 0.5 | 5.0 |
| ***PFTrDA*** | 72629-94-8 | 0.15 | 0.5 | 5.0 |
| ***PFTeDA*** | 376-06-7 | 0.25 | 1.0 | 5.0 |
| ***NMeFOSAA*** | 2355-31-9 | 0.56 | 2.0 | 5.0 |
| ***NEtFOSAA*** | 2991-50-6 | 0.49 | 1.0 | 5.0 |
| PFOSA | 754-91-6 | TBD | TBD | TBD |
| ***PFBS*** | 375-73-5 | 0.13 | 0.5 | 5.0 |
| PFPeS | BDO-2114 | 0.67 | 2.5 | 5.0 |
| ***PFHxS*** | 355-46-4 | 0.11 | 0.4 | 5.0 |
| ***PFHpS*** | 375-99-6 | 0.20 | 0.5 | 5.0 |
| ***PFOS*** | 1763-23-1 | 0.19 | 0.5 | 5.0 |
| PFNS | 98789-57-2 | 0.46 | 1.0 | 5.0 |
| ***PFDS*** | 2806-15-7 | 0.17 | 0.5 | 5.0 |
| ***4:2FTS*** | BDO-2205 | 0.14 | 0.5 | 5.0 |
| ***6:2FTS*** | 27619-97-2 | 1.36 | 2.5 | 5.0 |
| ***8:2FTS*** | 39108-34-4 | 0.22 | 0.5 | 5.0 |

***Analytes on NELAP and ELAP QSM 5.1 Scope of accreditation***



Battelle and its logos are registered trademarks of Battelle Memorial Institute. © Battelle Memorial Institute 2018. All Rights Reserved.

ID 596 04/18

Analytical Transitions for PFAS in non-potable water, solid, and tissue

EPA 537 MOD DoD QSM 5.1 compliant with Table B-15 requirements

| Analyte | CAS No. | Type | Primary Transition | Secondary Transition |
|---|---|---|---|---|
| PFBA | 375-22-4 | Target | 213.0 / 169.0 | NA |
| PFPeA | 2706-90-3 | Target | 263.0 / 219.0 | NA |
| PFHxA | 307-24-4 | Target | 313.0 / 269.0 | 313.0 / 119.0 |
| PFHpA | 375-85-9 | Target | 363.0 / 319.0 | 363.0 / 169.0 |
| PFOA | 335-67-1 | Target | 413.0 / 369.0 | 413.0 / 169.0 |
| PFNA | 375-95-1 | Target | 463.0 / 419.0 | 463.0 / 219.0 |
| PFDA | 335-76-2 | Target | 513.0 / 469.0 | 513.0 / 219.0 |
| PFUnA | 2058-94-8 | Target | 563.0 / 519.0 | 563.0 / 269.0 |
| PFDoA | 307-55-1 | Target | 613.0 / 569.0 | 613.0 / 319.0 |
| PFTrDA | 72629-94-8 | Target | 663.0 / 619.0 | 663.0 / 169.0 |
| PFTeDA | 376-06-7 | Target | 713.0 / 669.0 | 713.0 / 169.0 |
| NMeFOSAA | 2355-31-9 | Target | 570.0 / 419.0 | 570.0 / 512.0 |
| NEtFOSAA | 2991-50-6 | Target | 584.0 / 419.0 | 584.0 / 483.0 |
| PFOSA | 754-91-6 | Target | 498.0 / 78.0 | 498.0 / 83.0 |
| PFBS | 375-73-5 | Target | 299.0 / 80.0 | 299.0 / 99.0 |
| PFPeS | BDO-2114 | Target | 349.0 / 99.0 | 249.0 / 80.0 |
| PFHxS | 355-46-4 | Target | 399.0 / 80.0 | 399.0 / 99.0 |
| PFHpS | 375-99-6 | Target | 449.0 / 80.0 | 449.0 / 99.0 |
| PFOS | 1763-23-1 | Target | 499.0 / 80.0 | 499.0 / 99.0 |
| PFNS | 98789-57-2 | Target | 549.0 / 99.0 | 549.0 / 80.0 |
| PFDS | 2806-15-7 | Target | 599.0 / 80.0 | 599.0 / 99.0 |
| 4:2FTS | BDO-2205 | Target | 327.0 / 307.0 | 327.0 / 80.0 |
| 6:2FTS | 27619-97-2 | Target | 427.0 / 407.0 | 427.0 / 81.0 |
| 8:2FTS | 39108-34-4 | Target | 527.0 / 507.0 | 527.0 / 487.0 |
| 13C4-PFBA | BDO-2105 | SIS[1] | 217.0 / 172.0 | NA |
| 13C5-PFPeA | BDO-2216 | SIS[1] | 268.0 / 223.0 | NA |
| 13C5-PFHxA | BDO-2217 | SIS[1] | 318.0 / 273.0 | NA |

| Analyte | CAS No. | Type | Primary Transition | Secondary Transition |
|---|---|---|---|---|
| 13C4-PFHpA | BDO-2218 | SIS[1] | 367.0 / 322.0 | NA |
| 13C8-PFOA | BDO-2219 | SIS[1] | 421.0 / 376.0 | NA |
| 13C9-PFNA | BDO-2221 | SIS[1] | 472.0 / 427.0 | NA |
| 13C6-PFDA | BDO-2222 | SIS[1] | 519.0 / 474.0 | NA |
| 13C7-PFUnA | BDO-2223 | SIS[1] | 570.0 / 525.0 | NA |
| 13C2-PFDoA | BDO-2112 | SIS[1] | 615.0 / 570.0 | NA |
| 13C2-PFTeDA | BDO-2224 | SIS[1] | 715.0 / 670.0 | NA |
| d3-MeFOSAA | BDO-1838 | SIS[1] | 573.0 / 419.0 | NA |
| d5-EtFOSAA | BDO-1839 | SIS[1] | 589.0 / 419.0 | NA |
| 13C8-FOSA | BDO-2225 | SIS[1] | 506.0 / 78.0 | NA |
| 13C3-PFBS | BDO-2226 | SIS[1] | 302.0 / 99.0 | NA |
| 13C3-PFHxS | BDO-2227 | SIS[1] | 402.0 / 99.0 | NA |
| 13C8-PFOS | BDO-2228 | SIS[1] | 507.0 / 99.0 | NA |
| 13C2-4:2FTS | BDO-2229 | SIS[1] | 329.0 / 81.0 | NA |
| 13C2-6:2FTS | BDO-2230 | SIS[1] | 429.0 / 81.0 | NA |
| 13C2-8:2FTS | BDO-2220 | SIS[1] | 529.0 / 81.0 | NA |
| 13C3-PFBA | BDO-2231 | IS[2] | 216.0 / 172.0 | NA |
| 13C2-PFOA | BDO-2107 | IS[2] | 415.0 / 370.0 | NA |
| 13C2-PFDA | BDO-2110 | IS[2] | 515.0 / 470.0 | NA |
| 13C4-PFOS | BDO-2121 | IS[2] | 503.0 / 99.0 | NA |

[1] – extracted internal standard (surrogate)
[2] – injection internal standard

BATTELLE

Non-Potable Water Calibration to Sample Equivalents

| ICAL (ng/L) | PIV (mL) | DF[1] | Sample Size (L) | Sample Equivalent (ng/L)[2] |
|---|---|---|---|---|
| 25 | 0.5 | 2 | 0.250 | 0.1 |
| 50 | 0.5 | 2 | 0.250 | 0.2 |
| 100 | 0.5 | 2 | 0.250 | 0.4 |
| 250 | 0.5 | 2 | 0.250 | 1.0 |
| 500 | 0.5 | 2 | 0.250 | 2.0 |
| 1,000 | 0.5 | 2 | 0.250 | 4.0 |
| 2,500 | 0.5 | 2 | 0.250 | 10.0 |
| 10,000 | 0.5 | 2 | 0.250 | 40.0 |
| 20,000 | 0.5 | 2 | 0.250 | 80.0 |

[1] - base level dilution as part of the extraction procedure

[2] - calculated equivalent of a sample based on the ICAL concentration

**Zef Scientific Inc.**

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

# QTRAP 5500

**LC/MS/MS Detector System**

Appendix ZEFPM003-2L

Mass Calibration and Tune Check

# QTRAP 5500
# Preventive Maintenance Checklist

| | |
|---|---|
| **Preventive Maintenance Date:** | 12-June-2018 |

| | |
|---|---|
| **Request ID:** | 9749 |
| **Company Name:** | Battelle Memorial Institute |
| **Instrument ID:** | X60666 |
| **Instrument Model:** | QTRAP 5500 |
| **Instrument Serial Number:** | AU23051004 |

☑ **PASS** ☐ **FAIL**

**Any failure will lead to an automatic Service Call being open to investigate fault.**

Preventive Maintenance is performed twice every year unless specified in the Service Contract. It is designed to help maintain optimum system performance and to help diagnose any system deficiencies.

Engineer is required the assigned Request ID for this PM otherwise making this job invalid.

**Comments:** Suspected issue with pulse gas manifold. TRAP testing in POSITIVE mode couldn't be finished because of pulse gas issue. The same issue will be taken care in separate service call.

**Performed By:** Kaustubh Dhayagude **Date:** 12-June-2018

**Approved By** :_____ **Date:** _____

© This document is the property of Zef Scientific and intended for Zef Scientific Inc trained engineers use only. No copying, all or partial, is permitted without prior authorization.

**Zef Scientific Inc.**

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

# QTRAP 5500

**LC/MS/MS Detector System**
Appendix ZEFPM003-2L

## PRE PM PPG PERFORMANCE EVALUATION:

☑ Consult Customer concerning the unit overall performance.
☑ Check Logbook for Services recently performed.
☑ Check Vacuum Pressure:

| CAD Settings | Vacuum Reading ( x $10^{-5}$ Torr) | Acceptance Criteria |
|---|---|---|
| ☑ CAD 0 | 0.6 | 0.4 to 1.1 x$10^{-5}$ Torr |
| ☑ CAD Low | 1.3 | Read Only |
| ☑ CAD Medium | 2.7 | Read Only |
| ☑ CAD High | 3.7 | Read Only |
| ☑ CAD 12 | 3.7 | 2.4 to 4.5 x$10^{-5}$ Torr |

☑ Check for Front end contamination symptoms. Run Q1 POS PPG using PPG 2e-7for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification

☑ No degradation or Sensitivity drop

☑ Check for Q3 contamination symptoms. Run Q3 POS PPG using PPG 2e-7for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification

☑ No degradation or Sensitivity drop

**Pre PM PPG Test:** Perform each of the following tests. Optimize ion source position only. The specifications listed for these Pre PM tests are guidelines only, not required to be met.

☑ Perform Q1 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

| Mass | Q1 Intensity | | Q1 Width Value | Width Specs |
|---|---|---|---|---|
| | Value | Spec | | |
| Q1 175.133 | 4.01 e6 | Read Only | 0.6998 | Read Only |
| Q1 500.380 | 2.81 e7 | Read Only | 0.7038 | Read Only |
| Q1 906.673 | 4.21 e7 | Read Only | 0.7071 | Read Only |

☑ Perform Q3 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

| Mass | Q3 Intensity | | Q3 Width Value | Width Specs |
|---|---|---|---|---|
| | Value | Spec | | |
| Q3 175.133 | 5.45 e6 | Read Only | 0.6873 | Read Only |
| Q3 500.380 | 2.69 e7 | Read Only | 0.7591 | Read Only |
| Q3 906.673 | 4.50 e7 | Read Only | 0.7843 | Read Only |

© This document is the property of Zef Scientific and intended for Zef Scientific Inc trained engineers use only. No copying, all or partial, is permitted without prior authorization.

**Zef Scientific Inc.**

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

# QTRAP 5500

**LC/MS/MS Detector System**

Appendix ZEFPM003-2L

☐ Perform MSMS POS in Product Ion scan with 609.3 parent and record daughter 195.1 using Reserpine 0.167 pmol/ul at the scan rate of 10 Da/s for 10 MCA. Calculate transmission efficiency comparing Q1POS 609 intensity. Transmission Efficiency: :__28.87%__ (Read Only)

| Mass | MSMS Intensity | | MSMS Width Value | Width Specs |
|---|---|---|---|---|
| | Value | Spec | | |
| Q1 609.3 | 4.26 e7 | Read Only | 0.7011 | Read Only |
| MS/MS 195.1 | 1.23 e7 | Read Only | 0.7069 | Read Only |

☑ Perform Q1 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

| Mass | Q1 Intensity | | Q1 Width Value | Width Specs |
|---|---|---|---|---|
| | Value | Spec | | |
| Q1 933.636 | 1.42 e7 | Read Only | 0.7686 | Read Only |

☑ Perform Q3 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

| Mass | Q3 Intensity | | Q3 Width Value | Width Specs |
|---|---|---|---|---|
| | Value | Spec | | |
| Q3 933.636 | 2.24 e7 | Read Only | 0.7243 | Read Only |

☑ Perform Product Ion scan using NEG PPG 3e-5M. Record10mca.

| Mass | Scan Rate | MCA | MSMS Intensity | | MSMS Width Value | Width Specs |
|---|---|---|---|---|---|---|
| | | | Value | Spec | | |
| MSMS 45 | 10 | 10 | 3.31 e6 | Read Only | 0.6746 | Read Only |

© This document is the property of Zef Scientific and intended for Zef Scientific Inc trained engineers use only. No copying, all or partial, is permitted without prior authorization.

**Zef Scientific Inc.**

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

# QTRAP 5500

**LC/MS/MS Detector System**

Appendix ZEFPM003-2L

## PREVENTIVE MAINTENANCE CHECKLIST:

☑ Check Cooling Fans for Turbo Pumps while MS is ON.
☑ Check QJet and QPS tuning voltage for reference.
☐ Record AC input Voltage while MS is OFF: _____(200-240VAC).
If Out-of-Range, notify customer.

☑ Clean Interface
- ☑ Curtain Plate
- ☑ Orifice Plate
- ☑ QJet
- ☑ Q0 Rods.

☑ Replace Roughing Pump Oil.
☑ Inspect Oil Exhaust Filter, if Applicable. ☐ N/A
☑ Clean and inspect built-in divert valve if used. ☐ N/A
☑ Check Multiplier Voltage, optimize if necessary.
☑ Replace four Air Filters at the bottom of the mass spectrometer.

☑Pump down overnight if possible. ☐ N/A

☑Perform Maintenance on Turbo V source.

☑Replace Electrode, if necessary. ☐ N/A
☑Check Turbo heaters resistances.
☑Check if Temperature is reached at 500C with TIS Probe installed.
☐Check if Temperature is reached at 500C with APCI Probe installed. ☑ N/A

© This document is the property of Zef Scientific and intended for Zef Scientific Inc trained engineers use only. No copying, all or partial, is permitted without prior authorization.

**Zef Scientific Inc.**

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

# QTRAP 5500

**LC/MS/MS Detector System**
Appendix ZEFPM003-2L

## POST PM PPG PERFORMANCE TESTS:

☑ Set-up Sample for Infusion.
☑ Check spray and adjust sprayer's position of the TIS source.
☑ Check Vacuum Pressure:

| CAD Settings | Vacuum Reading ( x $10^{-5}$ Torr) | Acceptance Criteria |
|---|---|---|
| ☑ CAD 0 | 0.7 | 0.4 to 1.1 x$10^{-5}$ Torr |
| ☑ CAD Low | 1.3 | Read Only |
| ☑ CAD Medium | 2.7 | Read Only |
| ☑ CAD High | 3.7 | Read Only |
| ☑ CAD 12 | 3.7 | 2.4 to 4.5 x$10^{-5}$ Torr |

☑ Perform Q1 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

| Mass | Q1 Intensity | | Q1 Width | Width Specs |
|---|---|---|---|---|
| | Value | Spec | Value | |
| Scan Rate 10 Da/s Record 10 mca | | | | |
| Q1 175.133 | 5.04 e6 | ≥1.2$^{e}$6 | 0.6737 | 0.6 to 0.8 |
| Q1 500.380 | 1.60 e7 | ≥9.0$^{e}$6 | 0.6961 | 0.6 to 0.8 |
| Q1 906.673 | 2.84 e7 | ≥1.4$^{e}$7 | 0.7179 | 0.6 to 0.8 |
| Scan Rate 1000 Da/s Record 50 mca | | | | |
| Q1 906.673 | 1.33 e8 | ≥6.8$^{e}$7 | 0.7465 | 0.6 to 0.8 |

☑ Perform Q3 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

| Mass | Q3 Intensity | | Q3 Width | Width Specs |
|---|---|---|---|---|
| | Value | Spec | Value | |
| Scan Rate 10 Da/s Record 10 mca | | | | |
| Q3 175.133 | 5.02 e6 | ≥1.2$^{e}$6 | 0.6719 | 0.6 to 0.8 |
| Q3 500.380 | 1.72 e7 | ≥9.0$^{e}$6 | 0.7443 | 0.6 to 0.8 |
| Q3 906.673 | 3.00 e7 | ≥1.4$^{e}$7 | 0.7504 | 0.6 to 0.8 |
| Scan Rate 1000 Da/s Record 50 mca | | | | |
| Q3 906.673 | 1.46 e8 | ≥6.8$^{e}$7 | 0.7202 | 0.6 to 0.8 |

☑ Perform "Product of 609.3" POS and record product ion 195.1 using Reserpine 0.167pmol/uL. Record 10 mca. Calculate Transmission efficiency comparing Q1POS 609 intensity.
Transmission Efficiency: 21.10% (≥ 10.0%)

| Mass | MSMS Intensity | | Width | Width Specs |
|---|---|---|---|---|
| | Value | Spec | Value | |
| Q1 609.3 | 5.78 e7 | N/A | 0.6888 | Read Only |
| MS/MS 195.1 | 1.22 e7 | N/A | 0.7003 | Read Only |

© This document is the property of Zef Scientific and intended for Zef Scientific Inc trained engineers use only. No copying, all or partial, is permitted without prior authorization.

**Zef Scientific Inc.**

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

# QTRAP 5500

**LC/MS/MS Detector System**

Appendix ZEFPM003-2L

☑ Perform Q1 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

| Mass | Scan Rate | Mca | Q1 Intensity | | Q1 Width Value | Width Specs |
|---|---|---|---|---|---|---|
| | | | Value | Spec | | |
| Q1 933.636 | 10 | 10 | 1.35 e7 | ≥1.0^e7 | 0.7486 | 0.6 to 0.8 |
| Q1 933.636 | 1000 | 50 | 7.52 e7 | ≥4.0^e7 | 0.7206 | 0.6 to 0.8 |

☑ Perform Q3 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

| Mass | Scan Rate | Mca | Q3 Intensity | | Q3 Width Value | Width Specs |
|---|---|---|---|---|---|---|
| | | | Value | Spec | | |
| Q3 933.636 | 10 | 10 | 2.15 e7 | ≥8.0^e6 | 0.7492 | 0.6 to 0.8 |
| Q3 933.636 | 1000 | 50 | 8.33 e7 | ≥4.0^e7 | 0.7299 | 0.6 to 0.8 |

☑ Perform Product Ion scan using NEG PPG 3e-5M.

| Mass | Scan Rate | Mca | MSMS Intensity | | MSMS Width Value | Width Specs |
|---|---|---|---|---|---|---|
| | | | Value | Spec | | |
| MSMS 45 | 10 | 10 | 3.33 e6 | Read Only | 0.6387 | Read Only |

☑ Perform ER POS 118.087 and 922.01 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

| Mass | Fill Time (ms) | ER Intensity | | ER Width Value | Width Specs |
|---|---|---|---|---|---|
| | | Value | Spec | | |
| ScanRate : 1000 Da/s ; 50 Mca | | | | | |
| ER 118.087 | 0.05 | 8.54 e6 | ≥7.2 ^e6 | 0.1473 | <0.35 |
| ER 922.010 | 0.05 | 4.96 e7 | ≥2.8 ^e6 | 0.2434 | <0.35 |
| ScanRate : 10000 Da/s ; 50 Mca | | | | | |
| ER 118.087 | 0.05 | | ≥2.4 ^e7 | | <0.65 |
| ER 922.010 | 0.05 | | ≥6.8 ^e7 | | <0.65 |

☑ Perform ER NEG 431.982 and 601.978 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

| Mass | Fill Time (ms) | ER Intensity | | ER Width Value | Width Specs |
|---|---|---|---|---|---|
| | | Value | Spec | | |
| ScanRate : 1000 Da/s ; 50 Mca | | | | | |
| ER 431.982 | 0.05 | 1.81 e8 | ≥4.4 ^e7 | 0.1862 | <0.35 |
| ER 601.978 | 0.05 | 1.70 e8 | ≥5.6 ^e7 | 0.1809 | <0.35 |
| ScanRate : 10000 Da/s ; 50 Mca | | | | | |
| ER 431.982 | 0.05 | 5.72 e8 | ≥1.2 ^e8 | 0.5102 | <0.65 |
| ER 601.978 | 0.05 | 4.52 e8 | ≥1.6 ^e8 | 0.6187 | <0.65 |

© This document is the property of Zef Scientific and intended for Zef Scientific Inc trained engineers use only. No copying, all or partial, is permitted without prior authorization.

**Zef Scientific Inc.**

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

# QTRAP 5500

**LC/MS/MS Detector System**

Appendix ZEFPM003-2L

☑ Perform EPI POS 397.2 using Reserpine 0.167pmol/uL. Record 20 mca.

| Mass | Scan Rate (Da/s) | Q0 Trapping OFF | | Q0 Trapping ON | |
|---|---|---|---|---|---|
| | | Intensity | Spec | Intensity | Spec |
| EPI 397.2 | 10000 | > 3.0 e6 | ≥2.0 e6 | > 7.0 e6 | ≥6.4 e6 |

☑ Perform MS3 POS full scan Fragmentation ON & OFF using Reserpine 0.167pmol/uL. Record 20 mca.

| Mass | Scan Rate (Da/s) | Fragamentation OFF | | Fragmentation ON | |
|---|---|---|---|---|---|
| | | Intensity | Spec | Intensity | Spec |
| MS3 397.2 | 1000 | Yes | Contains only 397.2 | N/A | N/A |
| ☐ 236 OR ☑ 365 | 1000 | Yes | Fragment Intensity | > 2.0 e6 | ≥1.6x $10^{e}$6 |

## REVIEW:

☑ Attach all spectrums printouts to this procedure.
☑ If any parameter setting access modes were changed during the PM, ensure they are returned to their normal access mode and that their offsets are adjusted to match optimized values from the post-PM acquisition files.
☐ Empty tuning cache folder, if necessary. ☑ N/A
☑ Update Service Work Order status
☑ Fill and replace PM Label.

**END OF PREVENTIVE MAINTENANCE CHECKLIST**

## Document history:

06 OCT 2016: Appendix ZEFPM003-2L: Removed requirements to fit Manufacturer's testing criteria.

© This document is the property of Zef Scientific and intended for Zef Scientific Inc trained engineers use only. No copying, all or partial, is permitted without prior authorization.

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## SAMPLE PREPARATION RECORDS

| Project Title(s) | Project No.(s) |
|---|---|
| CTO-WE21: Former Naval Air Station, Brunswick, Maine | 100122108-CTOWE21 |

**18-0500**

**CTO-WE21: Former Naval Air Station, Brunswick, Maine**

**GW**

SOP Numbers (see workplan for modifications)

ExtractionSOP No. 5-370

| This Batch Contains The Following Samples: | |
|---|---|
| CR552PB-FS | J7397MS-FS |
| CR553LCS-FS | J7397MSD-FS |
| J7394-FS | J7398-FS |
| J7395-FS | J7399-FS |
| J7396-FS | J7400-FS |
| J7397-FS | J7402-FS |

Laboratory Preparation Records

COMPLETE AND VALIDATED

Prep Task Leader: Stephanie Schultz

| Approved By: | Date | Initials |
|---|---|---|
| Denise Schumitz | 08/24/2018 | DMS |

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## LIQUID SAMPLE ID FORM

**Project Title(s)** | **Project No.(s)**

CTO-WE21: Former Naval Air Station, Brunswick, Maine | 100122108-CTOWE21

**18-0500**

**CTO-WE21: Former Naval Air Station, Brunswick, Maine**

**GW**

| Sample ID | Description | Volume (mL) | Bottles | * | Date Initials |
|---|---|---|---|---|---|
| CR552PB-FS | Procedural Blank | 250.0 | NA | -- | 08/15/18 SAS |
| CR553LCS-FS | Laboratory Control Sample | 250.0 | NA | -- | 08/15/18 SAS |
| J7394-FS | NASB-CCC-GW-01-0818 | 285.0 | 1 | C | 08/15/18 SAS |
| J7395-FS | NASB-CCC-GW-02-0818 | 275.0 | 1 | C | 08/15/18 SAS |
| J7396-FS | NASB-BLL15-GW-02-0818 | 270.0 | 1 | C | 08/15/18 SAS |
| J7397-FS | NASB-BLL15-GW-01-0818 | 260.0 | 1 | C | 08/15/18 SAS |
| J7397MS-FS | Matrix Spike | 260.0 | 3 | C | 08/15/18 SAS |
| J7397MSD-FS | Matrix Spike Duplicate | 255.0 | 5 | C | 08/15/18 SAS |
| J7398-FS | NASB-BLL15-DUP-080918 | 275.0 | 1 | C | 08/15/18 SAS |
| J7399-FS | NASB-BLL15-GW-03-0818 | 265.0 | 1 | C | 08/15/18 SAS |
| J7400-FS | NASB-BLL15-GW-04-0818 | 290.0 | 1 | C | 08/15/18 SAS |
| J7402-FS | NASB-BLL15-GW-RB01-080918 | 255.0 | 1 | C | 08/15/18 SAS |

**Comments:**

Samples Assigned By Jonathan Thorn Date : August 10, 2018

* - "C" = Sample is Consumed

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## SURROGATE SPIKE FORM

**Project Title(s)**
CTO-WE21: Former Naval Air Station, Brunswick, Maine

**Project No.(s)**
100122108-CTOWE21

**18-0500**

**CTO-WE21: Former Naval Air Station, Brunswick, Maine**

**GW**

| Sample ID | Standard ID | Type | Vial No. | Vol Added (uL) | Date Spiked/ Spiked By | Witn'd By | Comment |
|---|---|---|---|---|---|---|---|
| CR552PB-FS | JY28 | SIS | 1 | 50 | 08/15/18 SAS | SG | NA |
| CR553LCS-FS | JY28 | SIS | 1 | 50 | 08/15/18 SAS | SG | NA |
| CR553LCS-FS | JZ27 | LCS/MS | 1 | 50 | 08/15/18 SAS | SG | NA |
| J7394-FS | JY28 | SIS | 1 | 50 | 08/15/18 SAS | SG | NA |
| J7395-FS | JY28 | SIS | 1 | 50 | 08/15/18 SAS | SG | NA |
| J7396-FS | JY28 | SIS | 1 | 50 | 08/15/18 SAS | SG | NA |
| J7397-FS | JY28 | SIS | 1 | 50 | 08/15/18 SAS | SG | NA |
| J7397MS-FS | JY28 | SIS | 1 | 50 | 08/15/18 SAS | SG | NA |
| J7397MS-FS | JZ27 | LCS/MS | 1 | 150 | 08/15/18 SAS | SG | NA |
| J7397MSD-FS | JY28 | SIS | 1 | 50 | 08/15/18 SAS | SG | NA |
| J7397MSD-FS | JZ27 | LCS/MS | 1 | 150 | 08/15/18 SAS | SG | NA |
| J7398-FS | JY28 | SIS | 1 | 50 | 08/15/18 SAS | SG | NA |
| J7399-FS | JY28 | SIS | 1 | 50 | 08/15/18 SAS | SG | NA |
| J7400-FS | JY28 | SIS | 1 | 50 | 08/15/18 SAS | SG | NA |
| J7402-FS | JY28 | SIS | 1 | 50 | 08/15/18 SAS | SG | NA |

Syringes/Pipettes Used:

| Std ID | Type | Syr/Pip |
|---|---|---|
| JY28 | Pipette | I0793912B |
| JZ27 | Pipette | B814657482 |
| JZ27 | Pipette | I0793912B |

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## INTERNAL STANDARD SPIKING FORM

**Project Title(s)**
CTO-WE21: Former Naval Air Station, Brunswick, Maine

**Project No.(s)**
100122108-CTOWE21

**18-0500**

**CTO-WE21: Former Naval Air Station, Brunswick, Maine**

**GW**

**(N/A Fraction)**

| Extract Id | Extr. Vol. (uL) | Added (uL) | Std. Id | Accm. (uL) | Vial No. | Pre Inj. Vol. (uL)^ | Final Dilution * | Date Spiked/ Spiked By | Witn'd By |
|---|---|---|---|---|---|---|---|---|---|
| CR552PB-FS(3) | 475 | 25 | JY26 | 25 | 1 | 500 | 2.000 | 08/20/18 SAS | LMG |
| CR553LCS-FS(3) | 475 | 25 | JY26 | 25 | 1 | 500 | 2.000 | 08/20/18 SAS | LMG |
| J7394-FS(3) | 475 | 25 | JY26 | 25 | 1 | 500 | 2.000 | 08/20/18 SAS | LMG |
| J7395-FS(3) | 475 | 25 | JY26 | 25 | 1 | 500 | 2.000 | 08/20/18 SAS | LMG |
| J7396-FS(3) | 475 | 25 | JY26 | 25 | 1 | 500 | 2.000 | 08/20/18 SAS | LMG |
| J7397-FS(3) | 475 | 25 | JY26 | 25 | 1 | 500 | 2.000 | 08/20/18 SAS | LMG |
| J7397MS-FS(3) | 475 | 25 | JY26 | 25 | 1 | 500 | 2.000 | 08/20/18 SAS | LMG |
| J7397MSD-FS(3) | 475 | 25 | JY26 | 25 | 1 | 500 | 2.000 | 08/20/18 SAS | LMG |
| J7398-FS(3) | 475 | 25 | JY26 | 25 | 1 | 500 | 2.000 | 08/20/18 SAS | LMG |
| J7399-FS(3) | 475 | 25 | JY26 | 25 | 1 | 500 | 2.000 | 08/20/18 SAS | LMG |
| J7400-FS(3) | 475 | 25 | JY26 | 25 | 1 | 500 | 2.000 | 08/20/18 SAS | LMG |
| J7402-FS(3) | 475 | 25 | JY26 | 25 | 1 | 500 | 2.000 | 08/20/18 SAS | LMG |

Syringes/Pipettes Used:

| Std ID | Type | Syr/Pip |
|---|---|---|
| JY26 | Pipette | B814659662 |

| Extract Id: | Comments: |
|---|---|
| CR552PB-FS | Samples reconstituted in 80/20 Methanol/milli-q water (RP-180820-3) |

* - Final Dilution is any HPLC, dilutions, or other manipulation

^ - Pre Injection Volume (PIV) includes any RIS spikes.

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## PREPARATION EXTRACT SPLIT FORM

**Project Title(s)**
CTO-WE21: Former Naval Air Station, Brunswick, Maine

**Project No.(s)**
100122108-CTOWE21

**18-0500**

**CTO-WE21: Former Naval Air Station, Brunswick, Maine**

**GW**

| Extract | | * | Extract Date | Source | | Initial Extract Vol (uL) | Extract Split | Extract Split | Total Dilution | Date/Initials |
|---|---|---|---|---|---|---|---|---|---|---|
| Name | # | | | Name | # | | | | | |
| CR552PB-FS | 0 | C | 8/15/2018 10:11:00 AM | NA | | NA | NA | 1.000 | 1.000 | 08/15/18 SAS |
| CR552PB-FS | 2 | -- | 8/17/2018 3:53:00 PM | CR552PB-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |
| CR552PB-FS | 3 | -- | 8/17/2018 3:53:00 PM | CR552PB-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |
| CR553LCS-FS | 0 | C | 8/15/2018 10:11:00 AM | NA | | NA | NA | 1.000 | 1.000 | 08/15/18 SAS |
| CR553LCS-FS | 2 | -- | 8/17/2018 3:53:00 PM | CR553LCS-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |
| CR553LCS-FS | 3 | -- | 8/17/2018 3:53:00 PM | CR553LCS-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |
| J7394-FS | 0 | C | 8/15/2018 10:11:00 AM | NA | | NA | NA | 1.000 | 1.000 | 08/15/18 SAS |
| J7394-FS | 2 | -- | 8/17/2018 3:53:00 PM | J7394-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |
| J7394-FS | 3 | -- | 8/17/2018 3:53:00 PM | J7394-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |
| J7395-FS | 0 | C | 8/15/2018 10:11:00 AM | NA | | NA | NA | 1.000 | 1.000 | 08/15/18 SAS |
| J7395-FS | 2 | -- | 8/17/2018 3:53:00 PM | J7395-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |
| J7395-FS | 3 | -- | 8/17/2018 3:53:00 PM | J7395-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |
| J7396-FS | 0 | C | 8/15/2018 10:11:00 AM | NA | | NA | NA | 1.000 | 1.000 | 08/15/18 SAS |
| J7396-FS | 2 | -- | 8/17/2018 3:53:00 PM | J7396-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## PREPARATION EXTRACT SPLIT FORM

**Project Title(s)**
CTO-WE21: Former Naval Air Station, Brunswick, Maine

**Project No.(s)**
100122108-CTOWE21

**18-0500**

**CTO-WE21: Former Naval Air Station, Brunswick, Maine**

**GW**

| Extract | | * | Extract Date | Source | | Initial Extract Vol (uL) | Extract Split | Extract Split | Total Dilution | Date/Initials |
|---|---|---|---|---|---|---|---|---|---|---|
| Name | # | | | Name | # | | | | | |
| J7396-FS | 3 | -- | 8/17/2018 3:53:00 PM | J7396-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |
| J7397-FS | 0 | C | 8/15/2018 1:28:00 PM | NA | | NA | NA | 1.000 | 1.000 | 08/15/18 SAS |
| J7397-FS | 2 | -- | 8/17/2018 3:53:00 PM | J7397-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |
| J7397-FS | 3 | -- | 8/17/2018 3:53:00 PM | J7397-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |
| J7397MS-FS | 0 | C | 8/15/2018 1:28:00 PM | NA | | NA | NA | 1.000 | 1.000 | 08/15/18 SAS |
| J7397MS-FS | 2 | -- | 8/17/2018 3:53:00 PM | J7397MS-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |
| J7397MS-FS | 3 | -- | 8/17/2018 3:53:00 PM | J7397MS-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |
| J7397MSD-FS | 0 | C | 8/15/2018 1:28:00 PM | NA | | NA | NA | 1.000 | 1.000 | 08/15/18 SAS |
| J7397MSD-FS | 2 | -- | 8/17/2018 3:53:00 PM | J7397MSD-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |
| J7397MSD-FS | 3 | -- | 8/17/2018 3:53:00 PM | J7397MSD-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |
| J7398-FS | 0 | C | 8/15/2018 1:28:00 PM | NA | | NA | NA | 1.000 | 1.000 | 08/15/18 SAS |
| J7398-FS | 2 | -- | 8/17/2018 3:53:00 PM | J7398-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |
| J7398-FS | 3 | -- | 8/17/2018 3:53:00 PM | J7398-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |
| J7399-FS | 0 | C | 8/15/2018 1:28:00 PM | NA | | NA | NA | 1.000 | 1.000 | 08/15/18 SAS |

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## PREPARATION EXTRACT SPLIT FORM

**Project Title(s)**
CTO-WE21: Former Naval Air Station, Brunswick, Maine

**Project No.(s)**
100122108-CTOWE21

**18-0500**

**CTO-WE21: Former Naval Air Station, Brunswick, Maine**

**GW**

| Extract | | * | Extract Date | Source | | Initial Extract Vol (uL) | Extract Split | Extract Split | Total Dilution | Date/Initials |
|---|---|---|---|---|---|---|---|---|---|---|
| Name | # | | | Name | # | | | | | |
| J7399-FS | 2 | -- | 8/17/2018 3:53:00 PM | J7399-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |
| J7399-FS | 3 | -- | 8/17/2018 3:53:00 PM | J7399-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |
| J7400-FS | 0 | C | 8/15/2018 1:28:00 PM | NA | | NA | NA | 1.000 | 1.000 | 08/15/18 SAS |
| J7400-FS | 2 | -- | 8/17/2018 3:53:00 PM | J7400-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |
| J7400-FS | 3 | -- | 8/17/2018 3:53:00 PM | J7400-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |
| J7402-FS | 0 | C | 8/15/2018 10:11:00 AM | NA | | NA | NA | 1.000 | 1.000 | 08/15/18 SAS |
| J7402-FS | 2 | -- | 8/17/2018 3:53:00 PM | J7402-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |
| J7402-FS | 3 | -- | 8/17/2018 3:53:00 PM | J7402-FS | 0 | 10000 | 5000 | 2.000 | 2.000 | 08/17/18 SAS |

| **Extract Id:** | **Comments:** |
|---|---|
| CR552PB-FS | Samples reconstituted in 80/20 Methanol/milli-q water (RP-180820-3) |

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## SAMPLE SPECIFIC COMMENTS

**Project Title(s)**
CTO-WE21: Former Naval Air Station, Brunswick, Maine

**Project No.(s)**
100122108-CTOWE21

**18-0500**

**CTO-WE21: Former Naval Air Station, Brunswick, Maine**

**GW**

| Sample ID: | Comment: | Date/Initials: |
|---|---|---|
| CR552PB-FS | Extraction for samples CR552PB-FS through J7396-FS and J7402-FS began at 10:11am | 08/15/18 SAS |
| CR552PB-FS | Sample extraction ended at 11:09am | 08/15/18 SAS |
| CR553LCS-FS | Sample extraction ended at 11:04am | 08/15/18 SAS |
| J7394-FS | Sample extraction ended at 11:11am | 08/15/18 SAS |
| J7395-FS | Sample extraction ended at 11:10am | 08/15/18 SAS |
| J7396-FS | Sample was yellow in color. | 08/15/18 SAS |
| J7396-FS | Sample extraction ended at 11:16am | 08/15/18 SAS |
| J7397-FS | Sample was yellow in color. | 08/15/18 SAS |
| J7397-FS | Extraction for samples J7397-FS through J7400-FS began at 1:28pm | 08/15/18 SAS |
| J7397-FS | Sample extraction ended at 2:28pm | 08/15/18 SAS |
| J7397MS-FS | Sample was yellow in color. | 08/15/18 SAS |
| J7397MS-FS | Sample extraction ended at 2:28pm | 08/15/18 SAS |
| J7397MSD-FS | Sample was yellow in color. | 08/15/18 SAS |
| J7397MSD-FS | Sample extraction ended at 2:31pm | 08/15/18 SAS |
| J7398-FS | Sample was yellow in color. | 08/15/18 SAS |
| J7398-FS | Sample extraction ended at 2:30pm | 08/15/18 SAS |
| J7399-FS | Sample was yellow in color. | 08/15/18 SAS |
| J7399-FS | Sample extraction ended at 2:33pm | 08/15/18 SAS |
| J7400-FS | Sample was yellow in color. | 08/15/18 SAS |
| J7400-FS | Sample extraction ended at 2:37pm | 08/15/18 SAS |
| J7402-FS | Sample extraction ended at 11:07am | 08/15/18 SAS |

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 30/08/2018 1:38:43 PM

| Vial | Laboratory Sample ID | Client Sample ID | Acquisition Date | Acquisition Method | Data File |
|---|---|---|---|---|---|
| 1 | MEOH | | 8/24/2018 10:26:02 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 2 | JY38 | L1 | 8/24/2018 10:36:54 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 3 | JY39 | L2 | 8/24/2018 10:47:47 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 4 | JY40 | L3 | 8/24/2018 10:58:41 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 5 | JY41 | L4 | 8/24/2018 11:09:34 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 6 | JY42 | L5 | 8/24/2018 11:20:26 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 7 | JY43 | L6 | 8/24/2018 11:31:18 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 8 | JY44 | L7 | 8/24/2018 11:42:11 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 9 | JY46 IB | Instrument Blank | 8/24/2018 11:53:03 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 10 | JY45 ICC | ICC | 8/25/2018 12:03:55 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 11 | JX29 BRANCH | Branch Standard | 8/25/2018 12:14:48 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 1 | MEOH | | 8/25/2018 4:35:48 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 32 | CR552PB-FS(3) | Procedural Blank | 8/25/2018 4:46:41 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 33 | CR553LCS-FS(3) | Laboratory Control Sample | 8/25/2018 4:57:34 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 34 | J7402-FS(3) | NASB-BLL15-GW-RB01-080918 | 8/25/2018 5:08:27 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 35 | J7394-FS(3) | NASB-CCC-GW-01-0818 | 8/25/2018 5:19:19 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 36 | J7395-FS(3) | NASB-CCC-GW-02-0818 | 8/25/2018 5:30:11 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 37 | J7396-FS(3) | NASB-BLL15-GW-02-0818 | 8/25/2018 5:41:02 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 51 | MEOH | | 8/25/2018 5:51:55 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 38 | JY42 CCV | CCV | 8/25/2018 6:02:47 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 51 | MEOH | | 8/25/2018 6:13:40 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 39 | J7397-FS(3) | NASB-BLL15-GW-01-0818 | 8/25/2018 6:24:32 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 40 | J7397MS-FS(3) | Matrix Spike Sample | 8/25/2018 6:35:25 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 41 | J7397MSD-FS(3) | Matrix Spike Duplicate Sample | 8/25/2018 6:46:18 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 42 | J7398-FS(3) | NASB-BLL15-DUP-080918 | 8/25/2018 6:57:11 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 43 | J7399-FS(3) | NASB-BLL15-GW-03-0818 | 8/25/2018 7:08:02 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 44 | J7400-FS(3) | NASB-BLL15-GW-04- | 8/25/2018 7:18:54 | 5-0369.dam | 18-0501-515-520- |

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 30/08/2018 1:38:43 PM

| Vial | Laboratory Sample ID | Client Sample ID | Acquisition Date | Acquisition Method | Data File |
|---|---|---|---|---|---|
| | | 0818 | AM | | 500.wiff |
| 45 | MEOH | | 8/25/2018 7:29:46 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 46 | JY41 CCV | CCV | 8/25/2018 7:40:38 AM | 5-0369.dam | 18-0501-515-520-500.wiff |

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 30/08/2018 1:54:09 PM

| Vial | Laboratory Sample ID | Client Sample ID | Acquisition Date | Acquisition Method | Data File |
|---|---|---|---|---|---|
| 1 | MeOH | | 8/28/2018 7:53:59 PM | 5-0369.dam | 18-0511_18-0517.wiff |
| 16 | JY38 | L1 | 8/28/2018 8:04:50 PM | 5-0369.dam | 18-0511_18-0517.wiff |
| 17 | JY39 | L2 | 8/28/2018 8:15:41 PM | 5-0369.dam | 18-0511_18-0517.wiff |
| 18 | JY40 | L3 | 8/28/2018 8:26:32 PM | 5-0369.dam | 18-0511_18-0517.wiff |
| 19 | JY41 | L4 | 8/28/2018 8:37:24 PM | 5-0369.dam | 18-0511_18-0517.wiff |
| 20 | JY42 | L5 | 8/28/2018 8:48:15 PM | 5-0369.dam | 18-0511_18-0517.wiff |
| 21 | JY43 | L6 | 8/28/2018 8:59:08 PM | 5-0369.dam | 18-0511_18-0517.wiff |
| 22 | JY44 | L7 | 8/28/2018 9:09:59 PM | 5-0369.dam | 18-0511_18-0517.wiff |
| 23 | JY46 IB | Instrument Blank | 8/28/2018 9:20:49 PM | 5-0369.dam | 18-0511_18-0517.wiff |
| 24 | JY45 ICC | ICC | 8/28/2018 9:31:41 PM | 5-0369.dam | 18-0511_18-0517.wiff |
| 25 | JX29 Branch | | 8/28/2018 9:42:33 PM | 5-0369.dam | 18-0511_18-0517.wiff |
| 1 | MeOH | | 8/28/2018 9:53:25 PM | 5-0369.dam | 18-0511_18-0517.wiff |
| 19 | JY41 CCV | CCV | 8/29/2018 12:58:01 AM | 5-0369.dam | 18-0511_18-0517.wiff |
| 1 | MeOH | | 8/29/2018 1:08:54 AM | 5-0369.dam | 18-0511_18-0517.wiff |
| 38 | J7394-FS(3) | NASB-CCC-GW-01-0818 | 8/29/2018 1:19:47 AM | 5-0369.dam | 18-0511_18-0517.wiff |
| ~~39~~ | ~~J7397-FS(3)~~ | ~~NASB-BLL15-GW-01-0818~~ | ~~8/29/2018 1:30:39 AM~~ | ~~5-0369.dam~~ | ~~18-0511_18-0517.wiff~~ |
| ~~40~~ | ~~J7397MS-FS(3)~~ | ~~Matrix Spike Sample~~ | ~~8/29/2018 1:41:30 AM~~ | ~~5-0369.dam~~ | ~~18-0511_18-0517.wiff~~ |
| ~~41~~ | ~~J7397MSD-FS(3)~~ | ~~Matrix Spike Duplicate Sample~~ | ~~8/29/2018 1:52:22 AM~~ | ~~5-0369.dam~~ | ~~18-0511_18-0517.wiff~~ |
| ~~42~~ | ~~J7398-FS(3)~~ | ~~NASB-BLL15-DUP-080918~~ | ~~8/29/2018 2:03:14 AM~~ | ~~5-0369.dam~~ | ~~18-0511_18-0517.wiff~~ |
| ~~43~~ | ~~J7399-FS(3)~~ | ~~NASB-BLL15-GW-03-0818~~ | ~~8/29/2018 2:14:05 AM~~ | ~~5-0369.dam~~ | ~~18-0511_18-0517.wiff~~ |
| ~~44~~ | ~~J7400-FS(3)~~ | ~~NASB-BLL15-GW-04-0818~~ | ~~8/29/2018 2:24:57 AM~~ | ~~5-0369.dam~~ | ~~18-0511_18-0517.wiff~~ |
| 45 | MeOH | | 8/29/2018 2:35:48 AM | 5-0369.dam | 18-0511_18-0517.wiff |
| 20 | JY42 CCV | CCV | 8/29/2018 2:46:39 AM | 5-0369.dam | 18-0511_18-0517.wiff |

1

1 These samples were rerun for confirmation and the results can be found in the unused data section of this data package. DMS 8/30/2018

BATTELLE

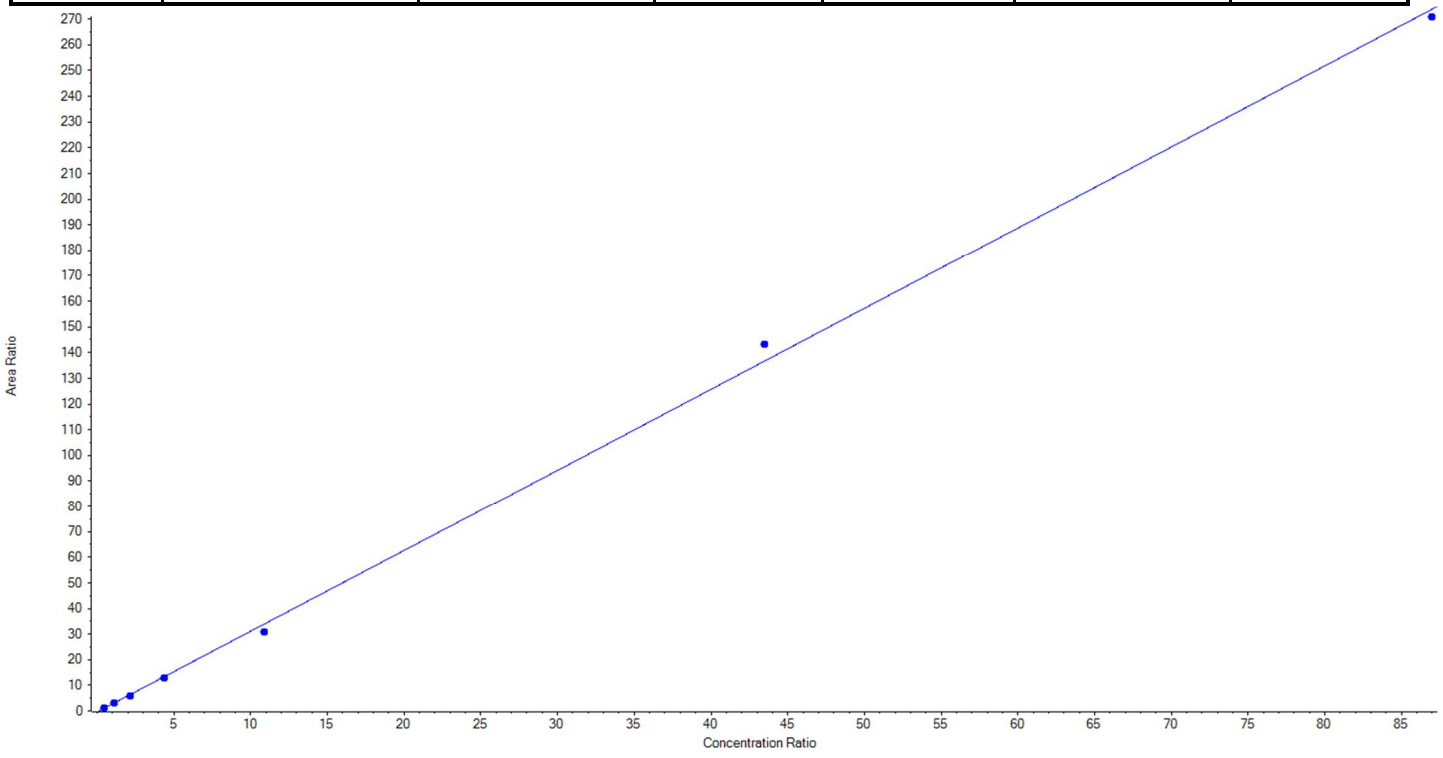
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFBS_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 298.9 / 80.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C3-PFBS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 3.15281 x + -0.41358 (r = 0.99916) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 101.00 | 118.174563 | 117.0 |
| 3 | JY39 | L2 | True | 252.50 | 254.441490 | 100.8 |
| 4 | JY40 | L3 | True | 505.00 | 456.707111 | 90.4 |
| 5 | JY41 | L4 | True | 1010.00 | 973.620829 | 96.4 |
| 6 | JY42 | L5 | True | 2525.00 | 2311.981236 | 91.6 |
| 7 | JY43 | L6 | True | 10100.00 | 10594.642449 | 104.9 |
| 8 | JY44 | L7 | True | 20200.00 | 19983.932322 | 98.9 |



BATTELLE

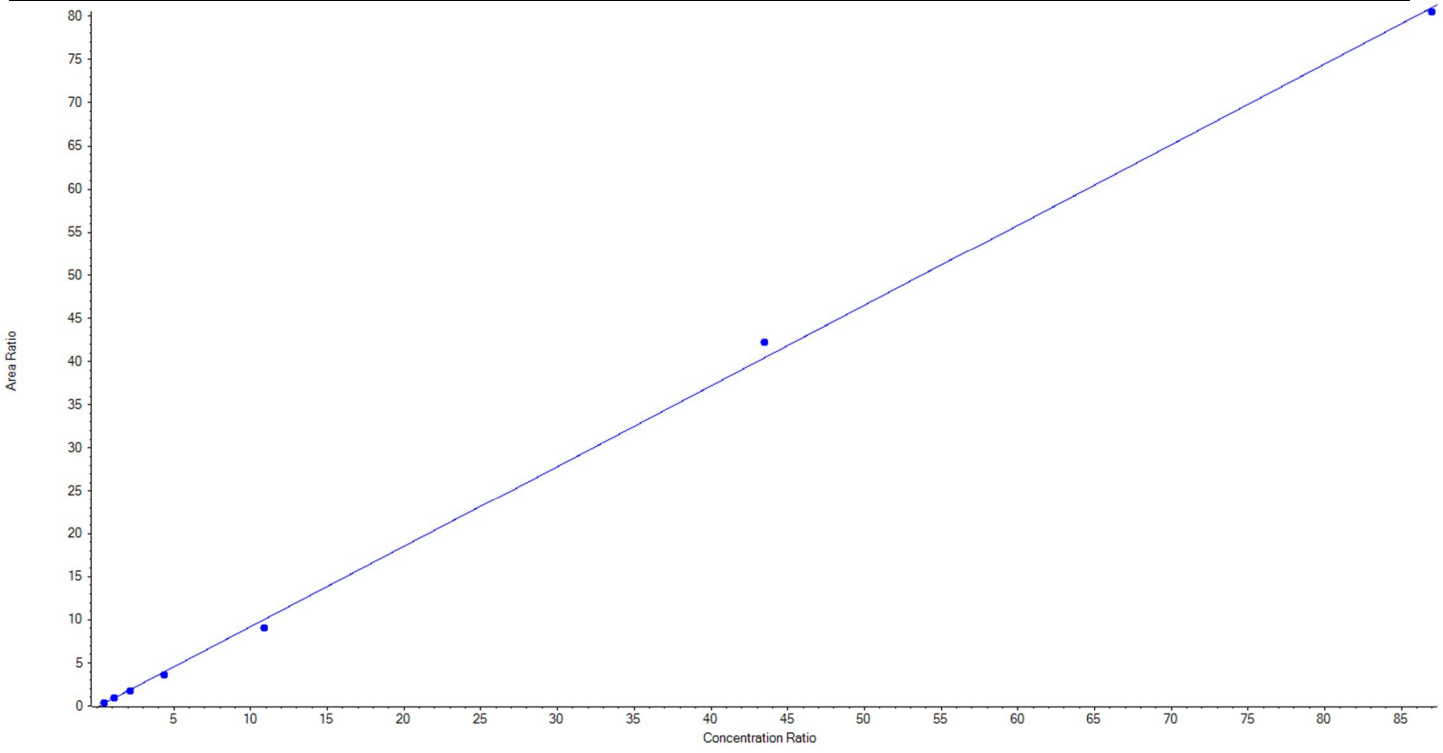
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFBS_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 298.9 / 99.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C3-PFBS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.93255 x + -0.12994 (r = 0.99907) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 101.00 | 124.006251 | 122.8 |
| 3 | JY39 | L2 | True | 252.50 | 251.390877 | 99.6 |
| 4 | JY40 | L3 | True | 505.00 | 457.925956 | 90.7 |
| 5 | JY41 | L4 | True | 1010.00 | 933.624261 | 92.4 |
| 6 | JY42 | L5 | True | 2525.00 | 2287.352093 | 90.6 |
| 7 | JY43 | L6 | True | 10100.00 | 10559.938920 | 104.6 |
| 8 | JY44 | L7 | True | 20200.00 | 20079.261643 | 99.4 |



BATTELLE

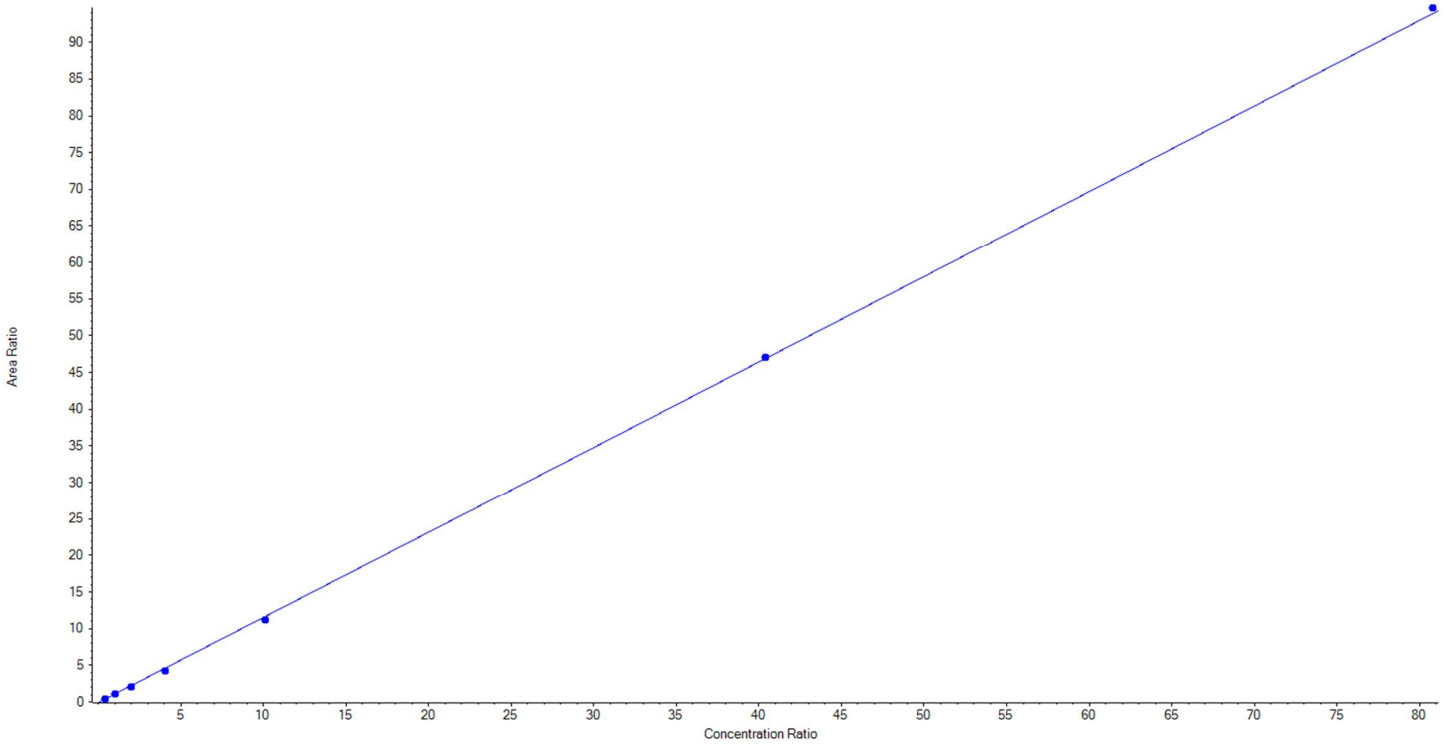
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHxA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 313.0 / 269.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C5-PFHxA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.16342 x + -0.10965 (r = 0.99970) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 101.00 | 117.846366 | 116.7 |
| 3 | JY39 | L2 | True | 252.50 | 259.195130 | 102.7 |
| 4 | JY40 | L3 | True | 505.00 | 465.851790 | 92.3 |
| 5 | JY41 | L4 | True | 1010.00 | 919.737382 | 91.1 |
| 6 | JY42 | L5 | True | 2525.00 | 2428.348557 | 96.2 |
| 7 | JY43 | L6 | True | 10100.00 | 10136.988023 | 100.4 |
| 8 | JY44 | L7 | True | 20200.00 | 20365.532752 | 100.8 |



BATTELLE

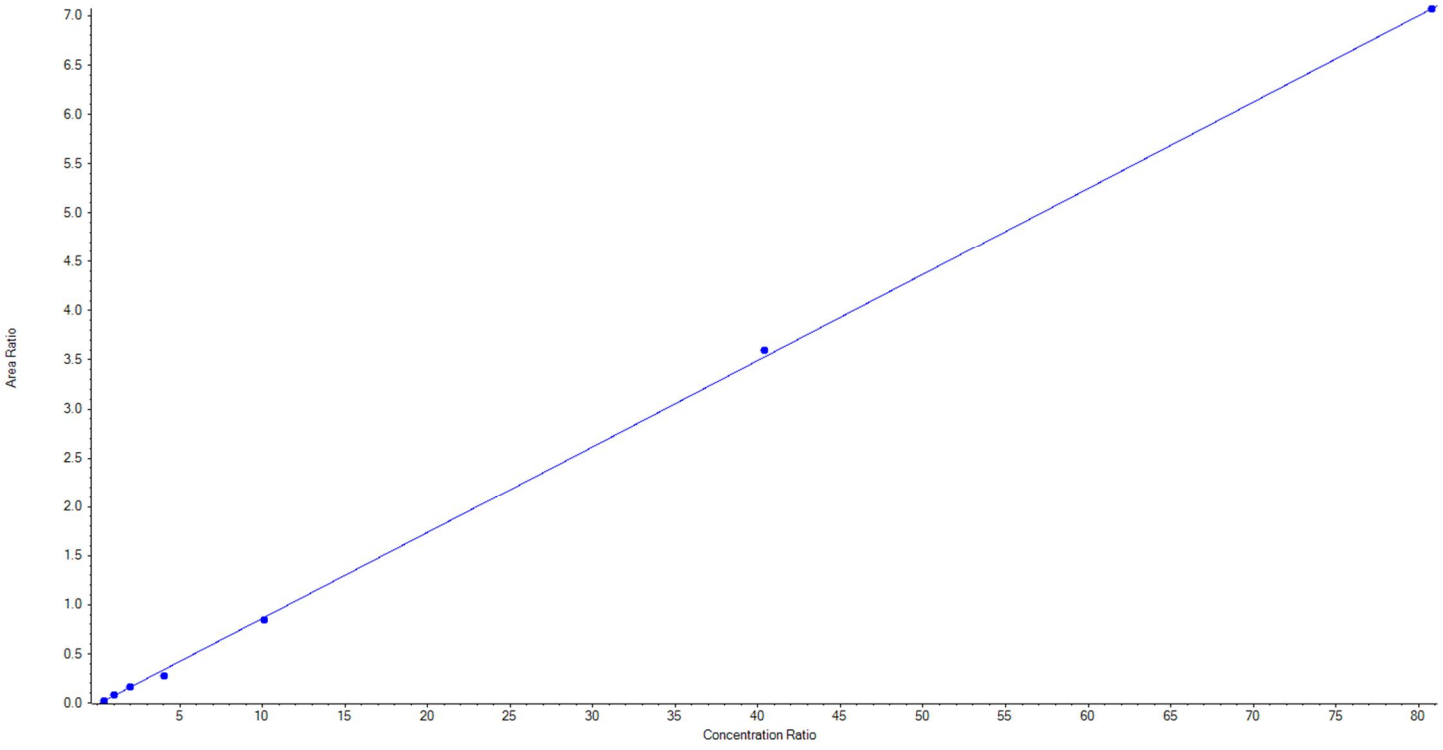
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHxA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 313.0 / 119.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C5-PFHxA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.08772 x + -0.01589 (r = 0.99944) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 101.00 | 108.429840 | 107.4 |
| 3 | JY39 | L2 | True | 252.50 | 269.130230 | 106.6 |
| 4 | JY40 | L3 | True | 505.00 | 521.629051 | 103.3 |
| 5 | JY41 | L4 | True | 1010.00 | 839.959766 | 83.2 |
| 6 | JY42 | L5 | True | 2525.00 | 2467.526138 | 97.7 |
| 7 | JY43 | L6 | True | 10100.00 | 10292.222124 | 101.9 |
| 8 | JY44 | L7 | True | 20200.00 | 20194.602851 | 100.0 |



BATTELLE

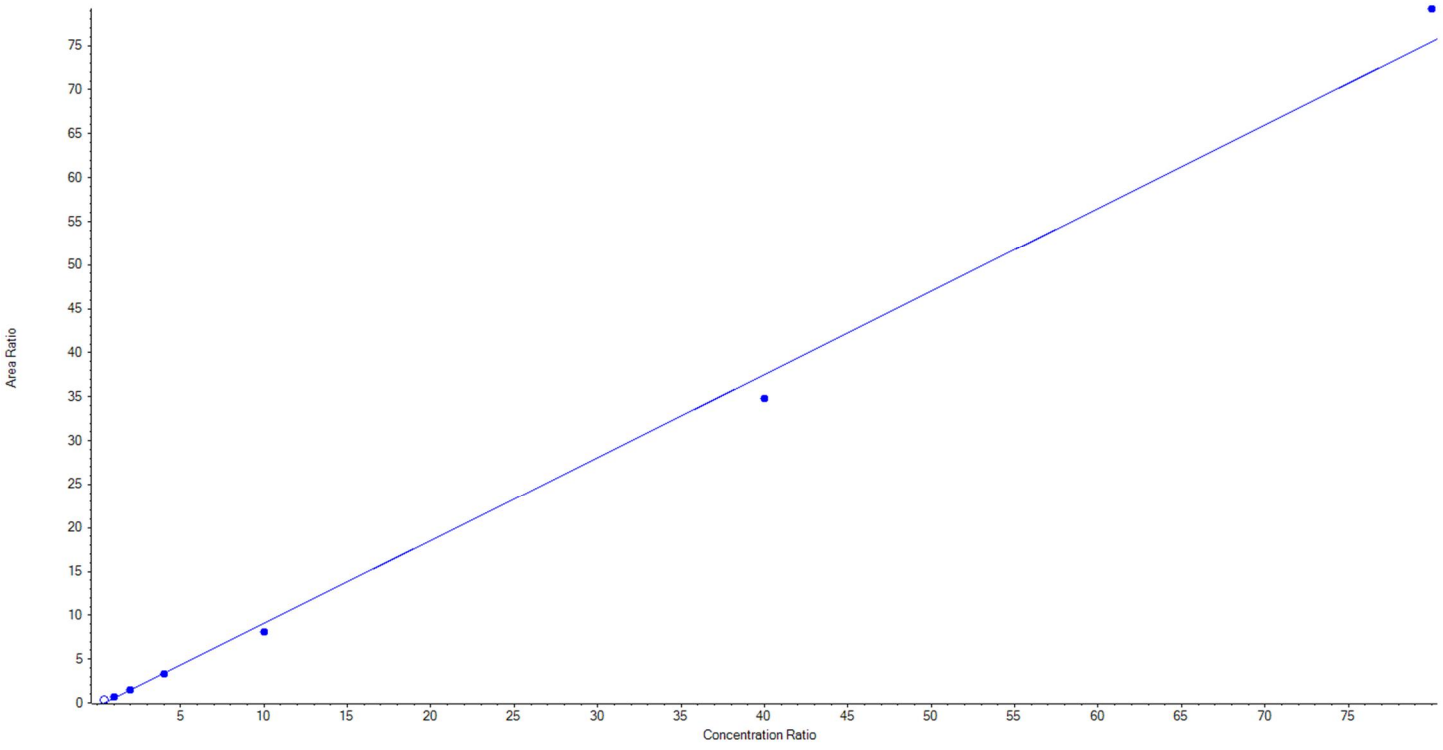
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHpA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 363.0 / 319.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C8-PFOA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.94822 x + -0.40079 (r = 0.99770) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | False | 100.00 | 183.037265 | 183.0 |
| 3 | JY39 | L2 | True | 250.00 | 289.678245 | 115.9 |
| 4 | JY40 | L3 | True | 500.00 | 493.381350 | 98.7 |
| 5 | JY41 | L4 | True | 1000.00 | 984.594709 | 98.5 |
| 6 | JY42 | L5 | True | 2500.00 | 2235.657765 | 89.4 |
| 7 | JY43 | L6 | True | 10000.00 | 9266.642157 | 92.7 |
| 8 | JY44 | L7 | True | 20000.00 | 20980.045774 | 104.9 |



BATTELLE

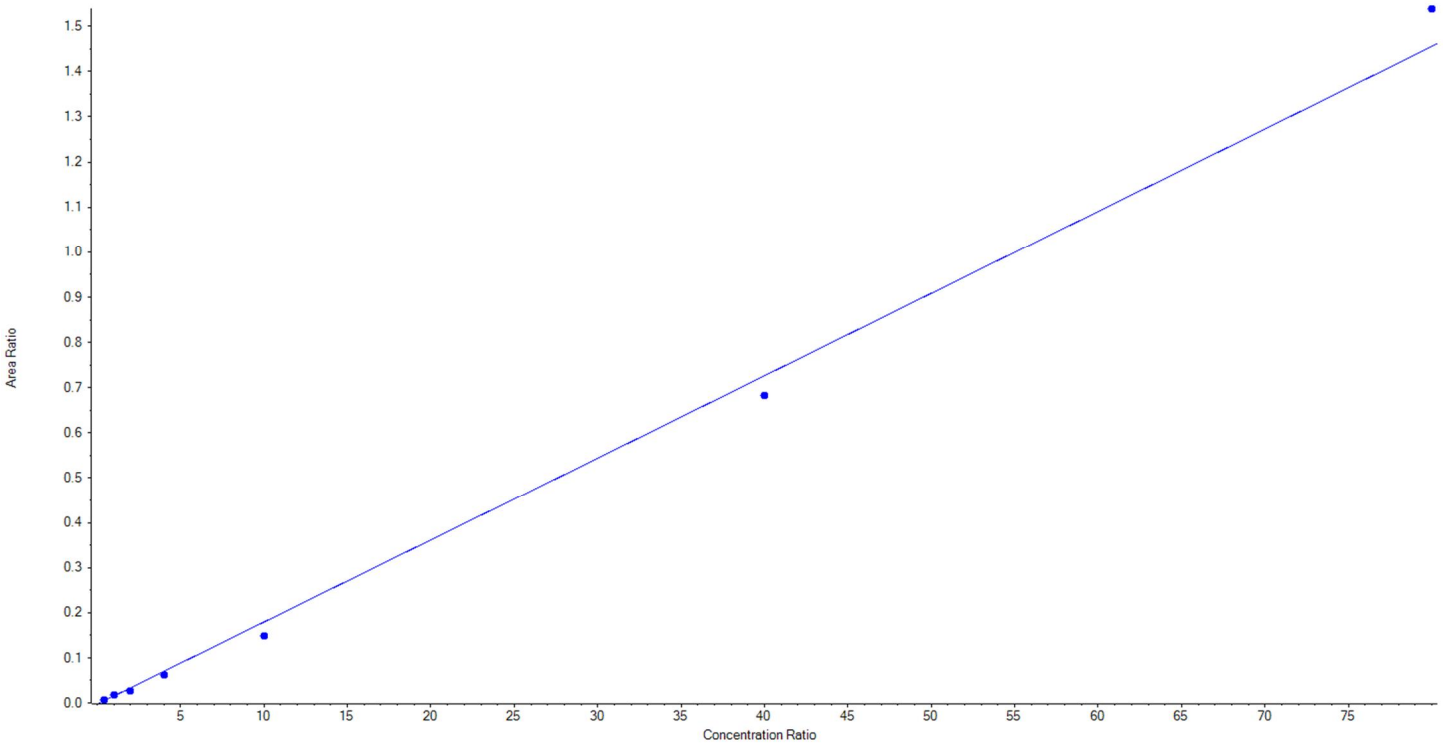
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHpA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 363.0 / 169.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C8-PFOA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.01823 x + -0.00296 (r = 0.99671) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 126.881979 | 126.9 |
| 3 | JY39 | L2 | True | 250.00 | 291.012163 | 116.4 |
| 4 | JY40 | L3 | True | 500.00 | 419.166669 | 83.8 |
| 5 | JY41 | L4 | True | 1000.00 | 899.978240 | 90.0 |
| 6 | JY42 | L5 | True | 2500.00 | 2081.185199 | 83.3 |
| 7 | JY43 | L6 | True | 10000.00 | 9395.142275 | 94.0 |
| 8 | JY44 | L7 | True | 20000.00 | 21136.633475 | 105.7 |



BATTELLE

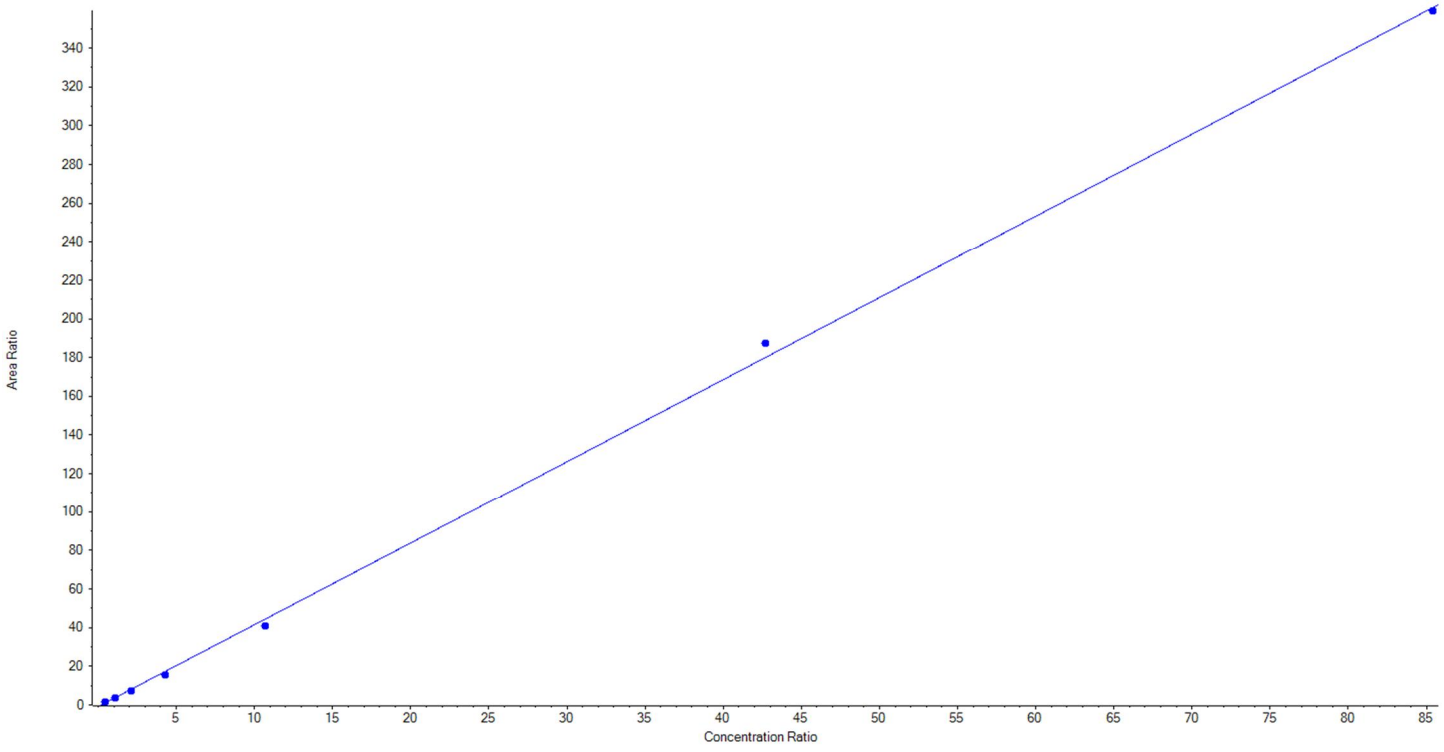
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHxS_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 399.0 / 80.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C3-PFHxS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 4.23537 x + -0.84536 (r = 0.99917) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 101.00 | 126.099371 | 124.9 |
| 3 | JY39 | L2 | True | 252.50 | 246.750083 | 97.7 |
| 4 | JY40 | L3 | True | 505.00 | 455.053362 | 90.1 |
| 5 | JY41 | L4 | True | 1010.00 | 928.278420 | 91.9 |
| 6 | JY42 | L5 | True | 2525.00 | 2316.855490 | 91.8 |
| 7 | JY43 | L6 | True | 10100.00 | 10517.109004 | 104.1 |
| 8 | JY44 | L7 | True | 20200.00 | 20103.354269 | 99.5 |



BATTELLE

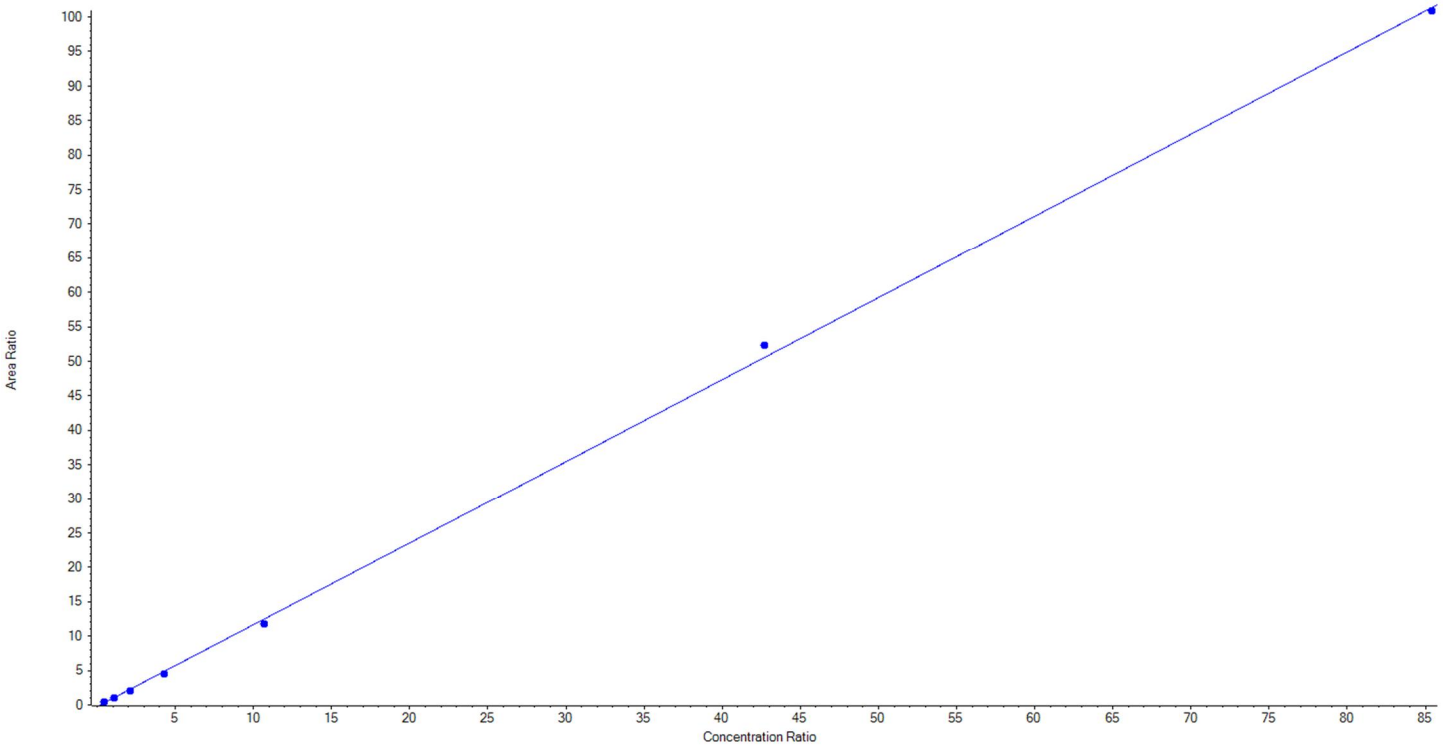
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHxS_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 399.0 / 99.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C3-PFHxS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.18953 x + -0.23223 (r = 0.99941) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 101.00 | 125.405816 | 124.2 |
| 3 | JY39 | L2 | True | 252.50 | 238.832101 | 94.6 |
| 4 | JY40 | L3 | True | 505.00 | 462.800440 | 91.6 |
| 5 | JY41 | L4 | True | 1010.00 | 934.199524 | 92.5 |
| 6 | JY42 | L5 | True | 2525.00 | 2375.949764 | 94.1 |
| 7 | JY43 | L6 | True | 10100.00 | 10452.350229 | 103.5 |
| 8 | JY44 | L7 | True | 20200.00 | 20103.962127 | 99.5 |



BATTELLE

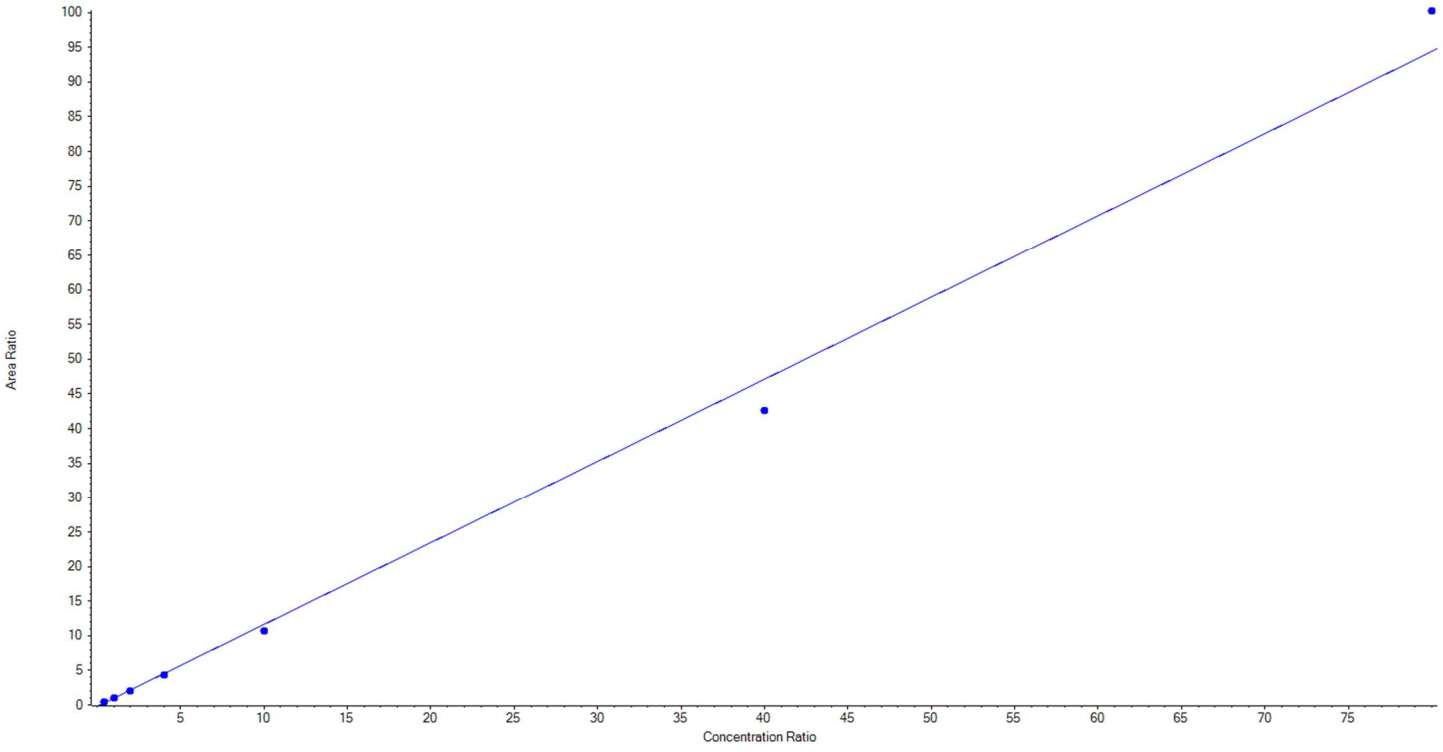
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFOA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 413.0 / 369.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C8-PFOA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.18259 x + -0.20416 (r = 0.99688) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 124.723500 | 124.7 |
| 3 | JY39 | L2 | True | 250.00 | 250.507586 | 100.2 |
| 4 | JY40 | L3 | True | 500.00 | 455.668756 | 91.1 |
| 5 | JY41 | L4 | True | 1000.00 | 957.408716 | 95.7 |
| 6 | JY42 | L5 | True | 2500.00 | 2291.377116 | 91.7 |
| 7 | JY43 | L6 | True | 10000.00 | 9038.437378 | 90.4 |
| 8 | JY44 | L7 | True | 20000.00 | 21231.876948 | 106.2 |



BATTELLE

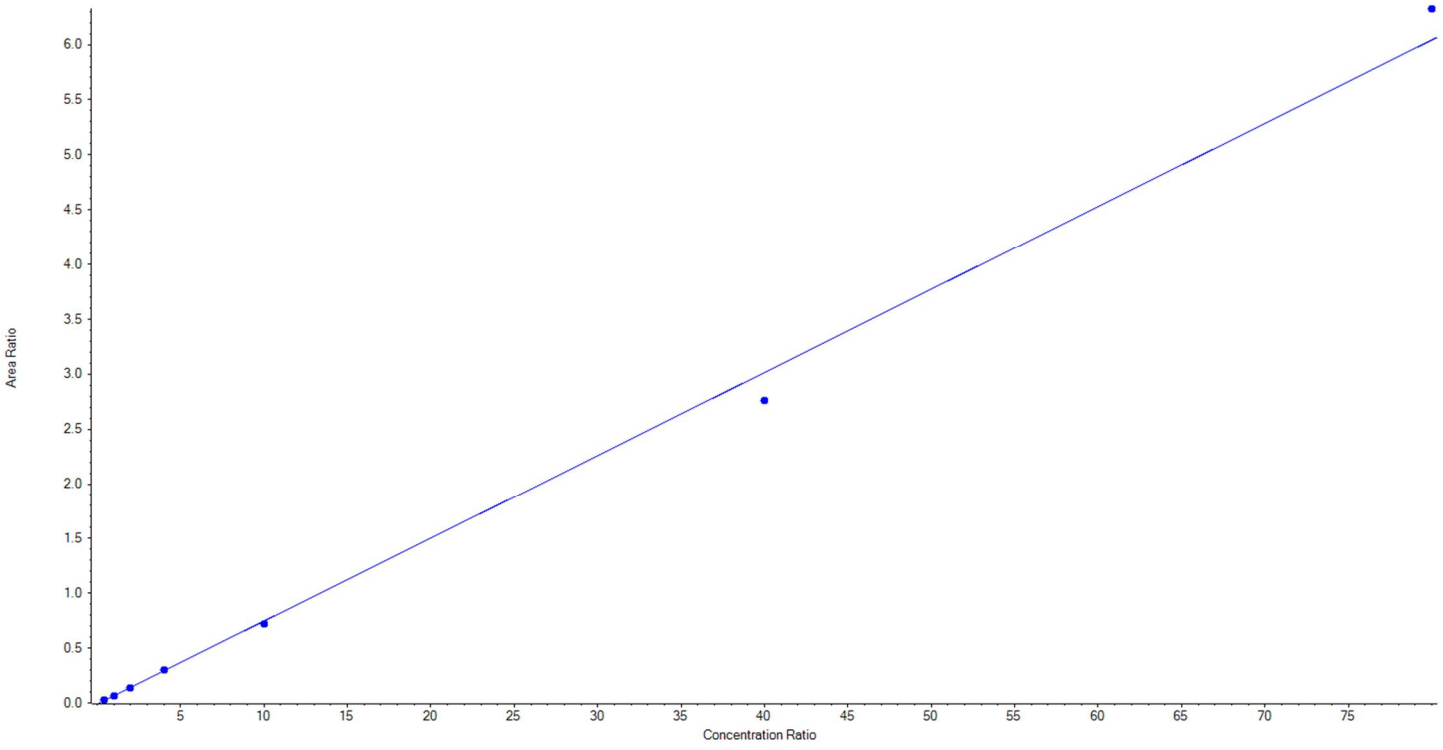
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFOA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 413.0 / 169.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C8-PFOA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.07565 x + -0.01028 (r = 0.99809) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 115.729454 | 115.7 |
| 3 | JY39 | L2 | True | 250.00 | 235.595736 | 94.2 |
| 4 | JY40 | L3 | True | 500.00 | 480.697290 | 96.1 |
| 5 | JY41 | L4 | True | 1000.00 | 1013.337499 | 101.3 |
| 6 | JY42 | L5 | True | 2500.00 | 2405.851339 | 96.2 |
| 7 | JY43 | L6 | True | 10000.00 | 9166.209412 | 91.7 |
| 8 | JY44 | L7 | True | 20000.00 | 20932.579270 | 104.7 |



BATTELLE

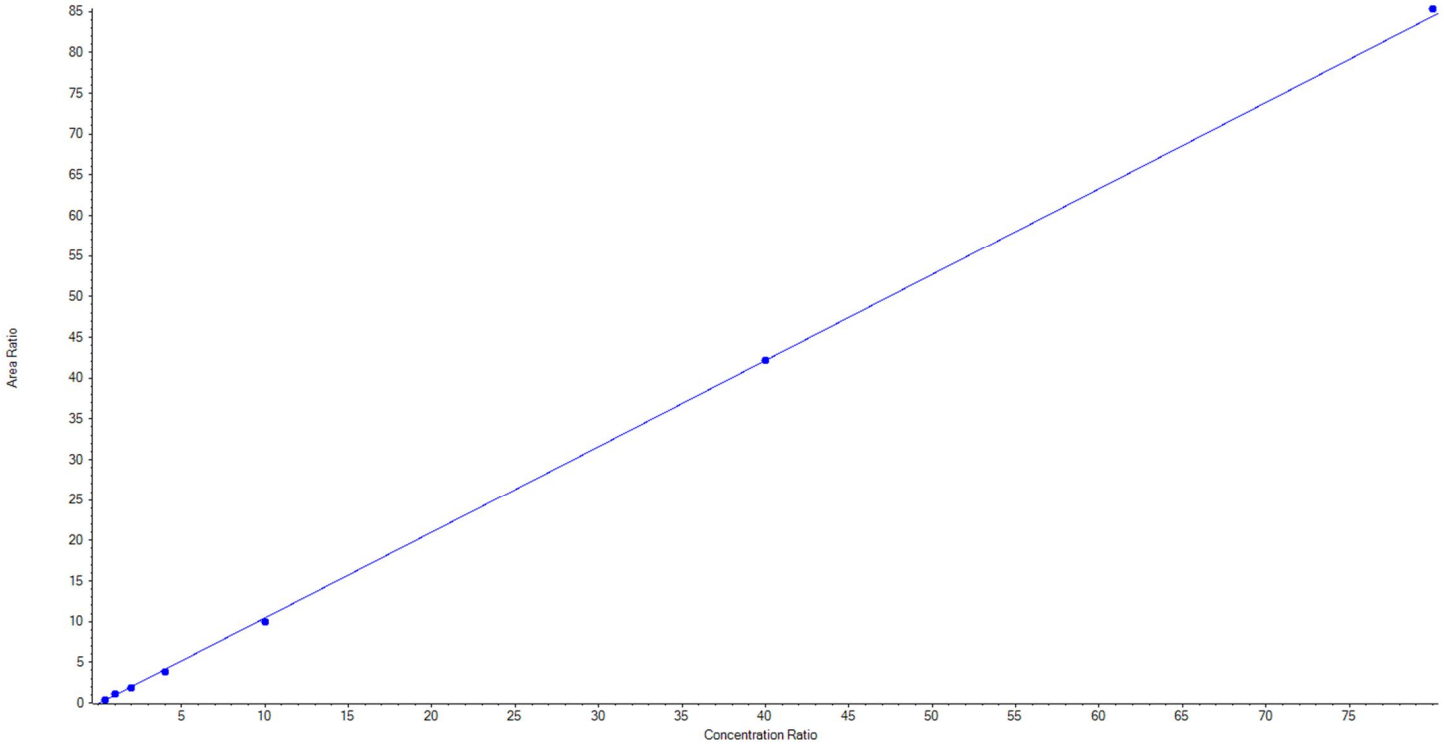
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFNA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 463.0 / 419.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C9-PFNA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.05685 x + -0.11971 (r = 0.99968) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 107.015449 | 107.0 |
| 3 | JY39 | L2 | True | 250.00 | 278.560077 | 111.4 |
| 4 | JY40 | L3 | True | 500.00 | 464.832649 | 93.0 |
| 5 | JY41 | L4 | True | 1000.00 | 927.907689 | 92.8 |
| 6 | JY42 | L5 | True | 2500.00 | 2371.276802 | 94.9 |
| 7 | JY43 | L6 | True | 10000.00 | 9990.022487 | 99.9 |
| 8 | JY44 | L7 | True | 20000.00 | 20210.384848 | 101.1 |



BATTELLE

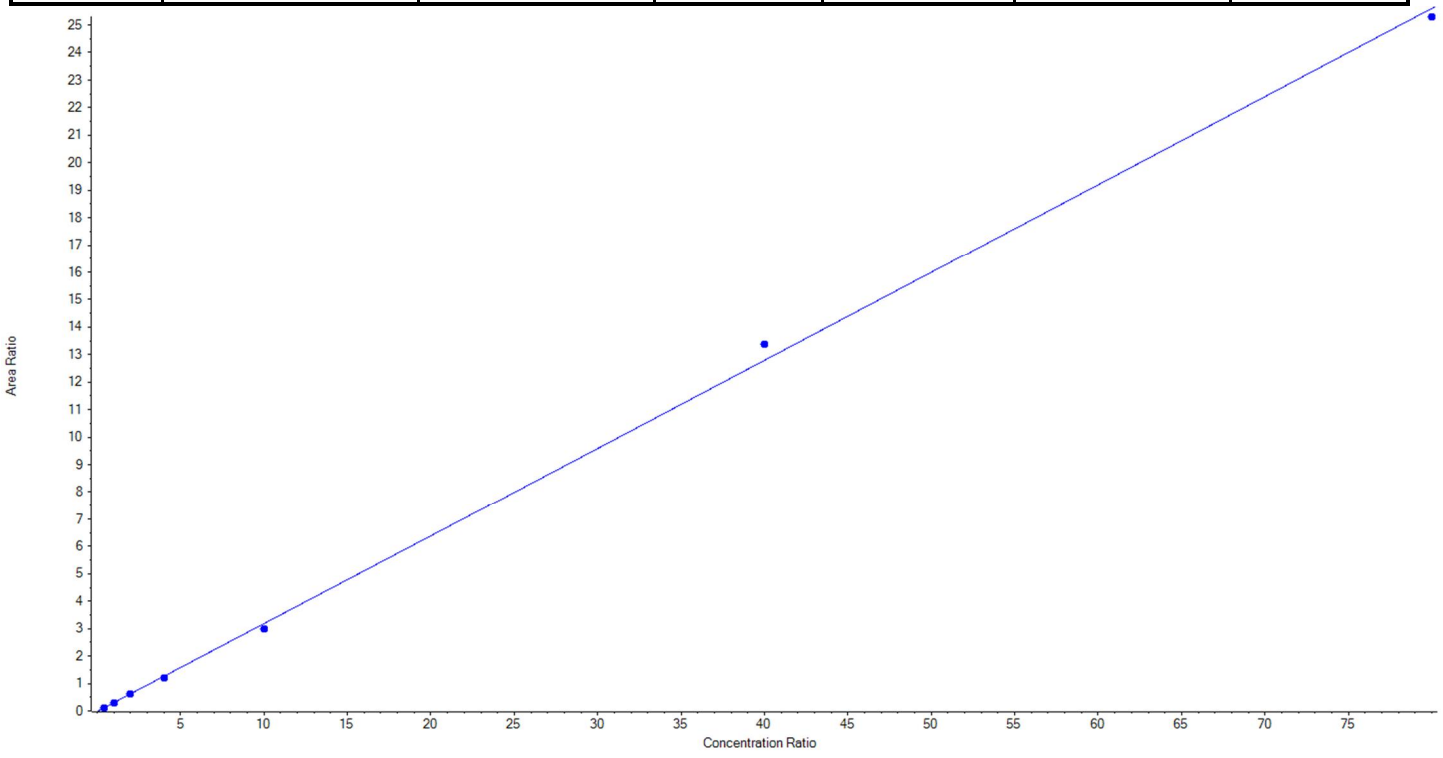
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFNA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 463.0 / 219.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C9-PFNA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.32026 x + -0.01897 (r = 0.99944) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 107.867314 | 107.9 |
| 3 | JY39 | L2 | True | 250.00 | 253.733268 | 101.5 |
| 4 | JY40 | L3 | True | 500.00 | 495.088887 | 99.0 |
| 5 | JY41 | L4 | True | 1000.00 | 944.716102 | 94.5 |
| 6 | JY42 | L5 | True | 2500.00 | 2348.525773 | 93.9 |
| 7 | JY43 | L6 | True | 10000.00 | 10441.723314 | 104.4 |
| 8 | JY44 | L7 | True | 20000.00 | 19758.345342 | 98.8 |



BATTELLE

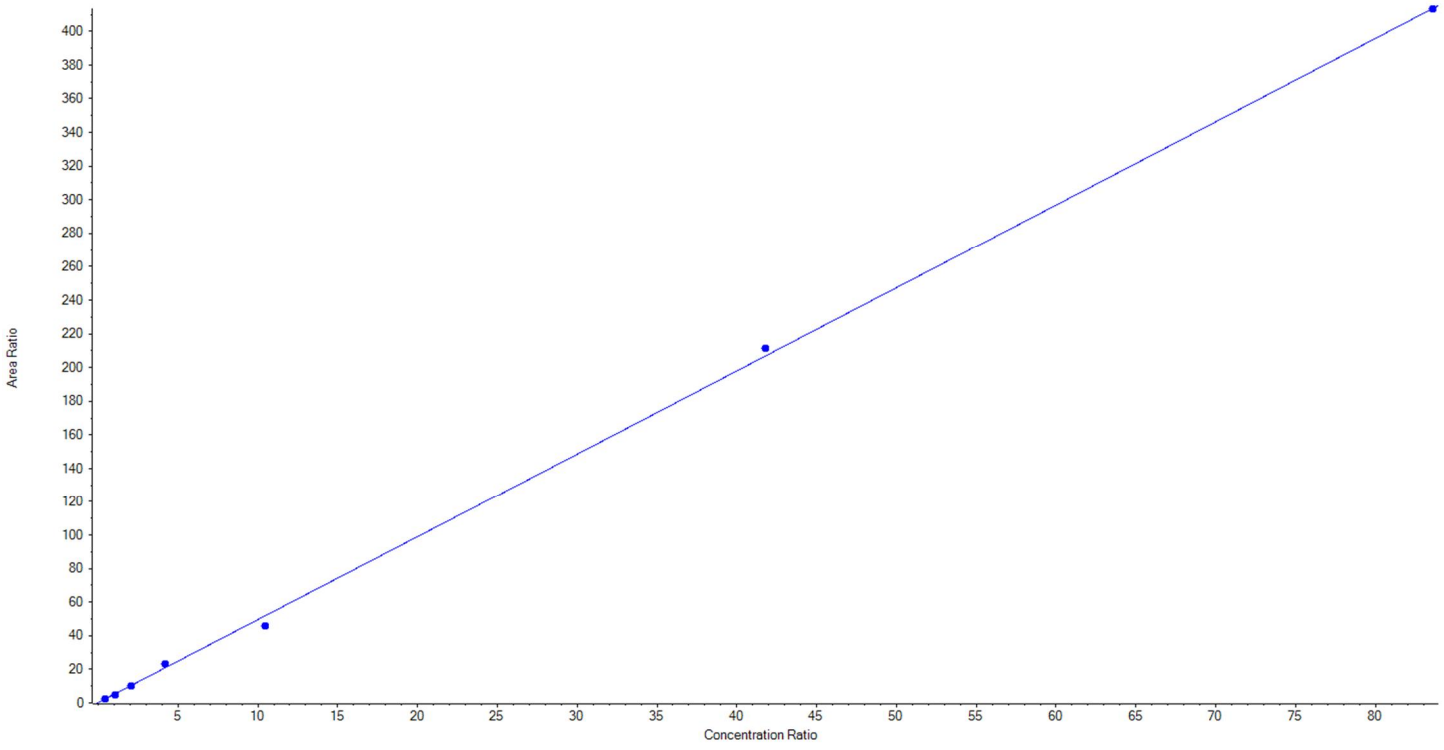
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFOS_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 499.0 / 80.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C8-PFOS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 4.94550 x + 0.15650 (r = 0.99918) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 108.675584 | 108.7 |
| 3 | JY39 | L2 | True | 250.00 | 234.616933 | 93.9 |
| 4 | JY40 | L3 | True | 500.00 | 479.887763 | 96.0 |
| 5 | JY41 | L4 | True | 1000.00 | 1108.586887 | 110.9 |
| 6 | JY42 | L5 | True | 2500.00 | 2213.074605 | 88.5 |
| 7 | JY43 | L6 | True | 10000.00 | 10218.525269 | 102.2 |
| 8 | JY44 | L7 | True | 20000.00 | 19986.632959 | 99.9 |



BATTELLE

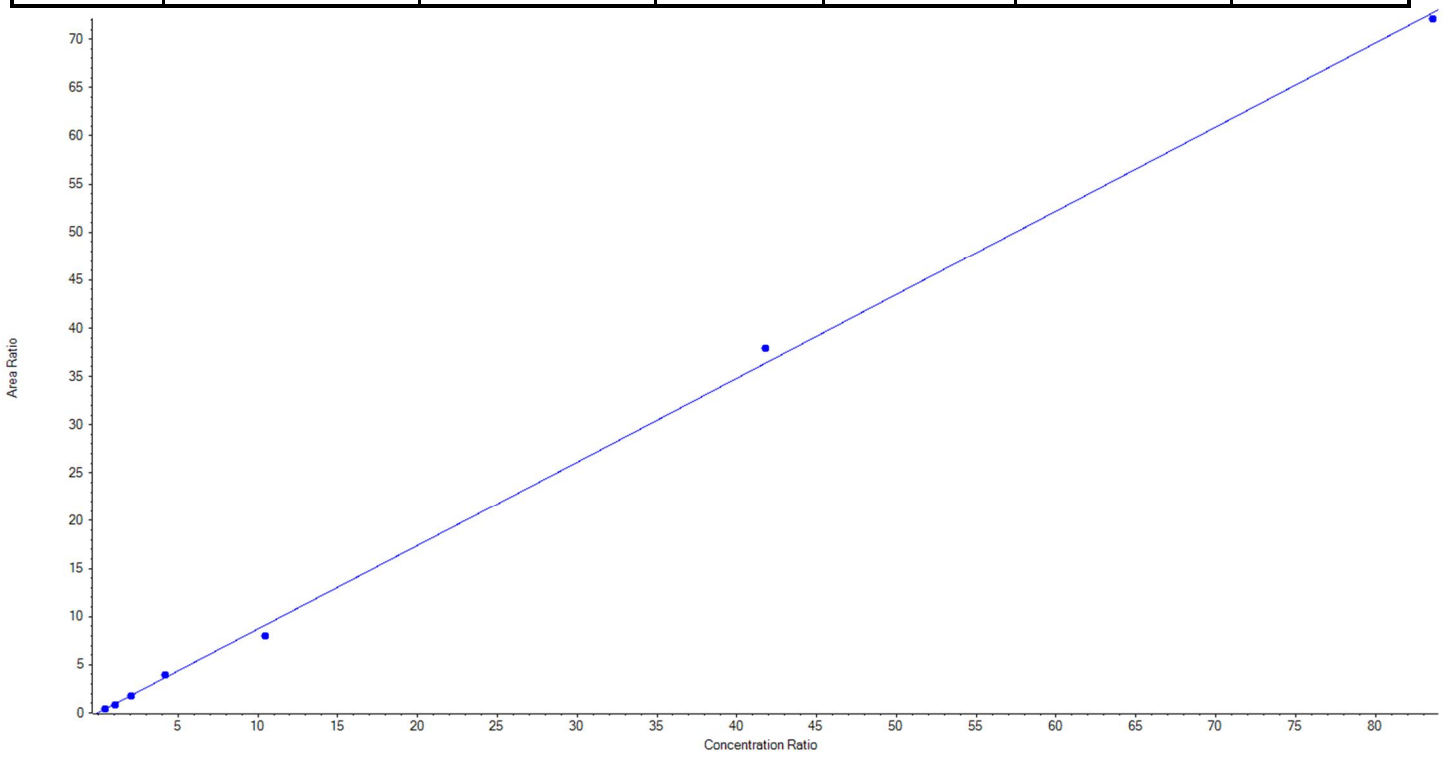
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFOS_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 499.0 / 99.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C8-PFOS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.86986 x + 0.01336 (r = 0.99881) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 117.347383 | 117.4 |
| 3 | JY39 | L2 | True | 250.00 | 217.248927 | 86.9 |
| 4 | JY40 | L3 | True | 500.00 | 477.582506 | 95.5 |
| 5 | JY41 | L4 | True | 1000.00 | 1091.956540 | 109.2 |
| 6 | JY42 | L5 | True | 2500.00 | 2190.256613 | 87.6 |
| 7 | JY43 | L6 | True | 10000.00 | 10430.517196 | 104.3 |
| 8 | JY44 | L7 | True | 20000.00 | 19825.090835 | 99.1 |



BATTELLE

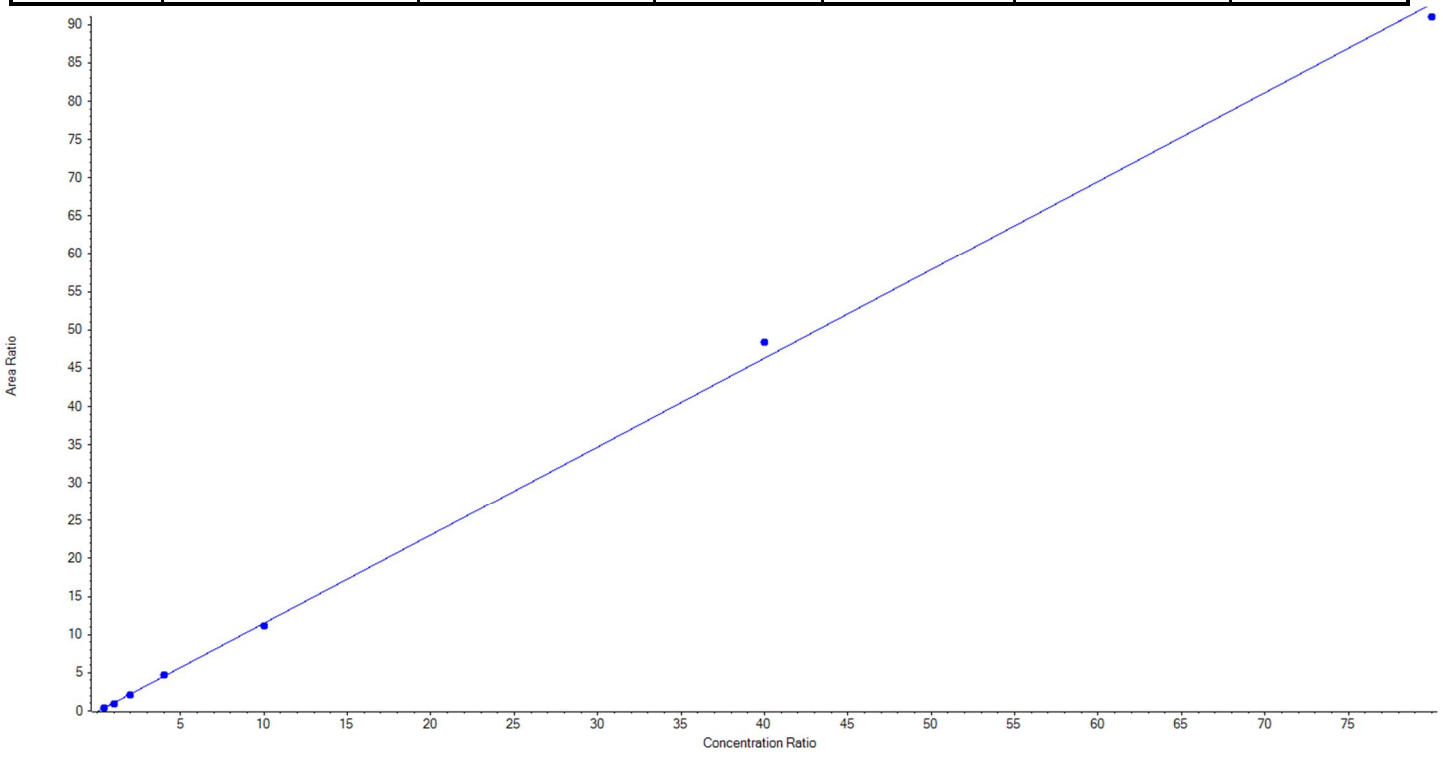
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFDA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 513.0 / 469.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C6-PFDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.16034 x + -0.10710 (r = 0.99947) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 110.198423 | 110.2 |
| 3 | JY39 | L2 | True | 250.00 | 231.107869 | 92.4 |
| 4 | JY40 | L3 | True | 500.00 | 470.043896 | 94.0 |
| 5 | JY41 | L4 | True | 1000.00 | 1035.018294 | 103.5 |
| 6 | JY42 | L5 | True | 2500.00 | 2432.445932 | 97.3 |
| 7 | JY43 | L6 | True | 10000.00 | 10438.811237 | 104.4 |
| 8 | JY44 | L7 | True | 20000.00 | 19632.374349 | 98.2 |



BATTELLE

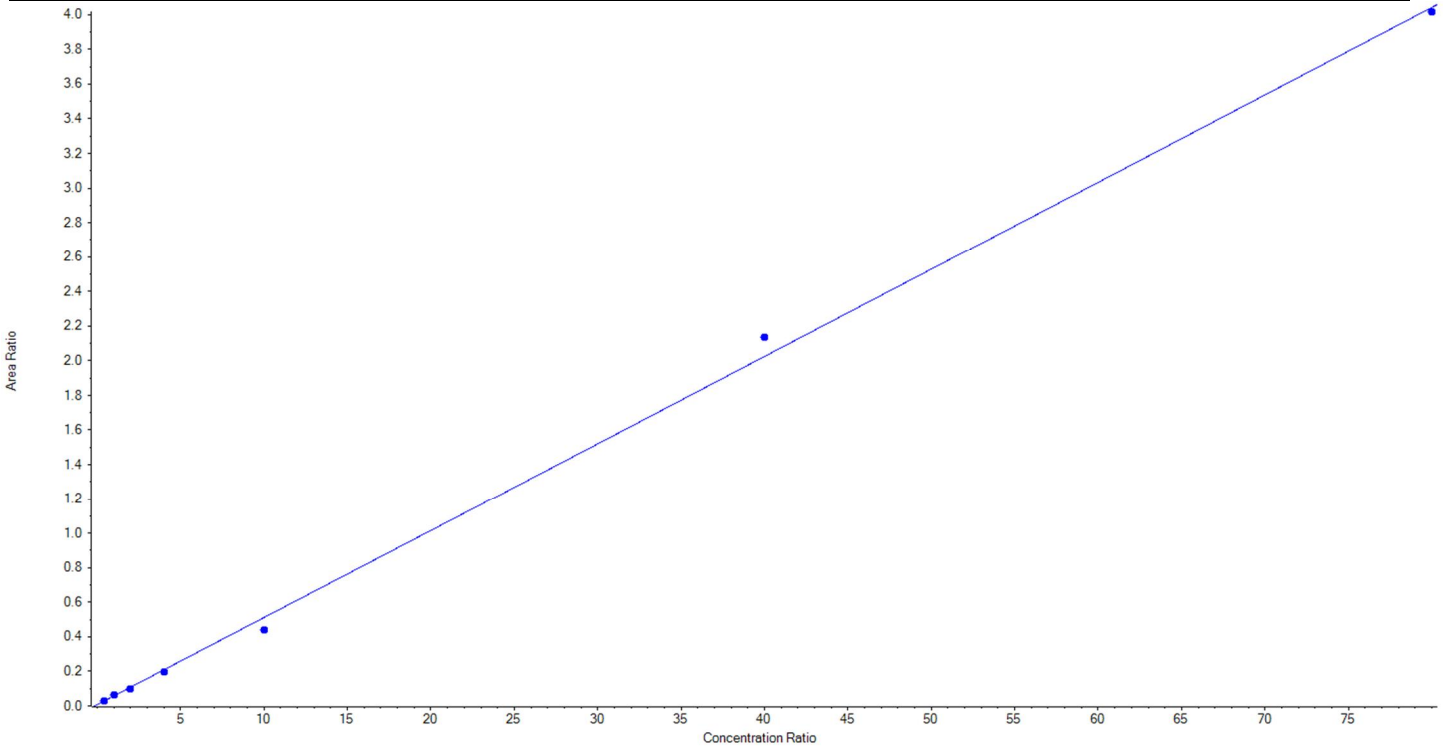
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFDA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 513.0 / 219.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C6-PFDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.05043 x + 0.00732 (r = 0.99845) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 114.079000 | 114.1 |
| 3 | JY39 | L2 | True | 250.00 | 275.419951 | 110.2 |
| 4 | JY40 | L3 | True | 500.00 | 457.576231 | 91.5 |
| 5 | JY41 | L4 | True | 1000.00 | 940.050222 | 94.0 |
| 6 | JY42 | L5 | True | 2500.00 | 2132.114826 | 85.3 |
| 7 | JY43 | L6 | True | 10000.00 | 10558.871916 | 105.6 |
| 8 | JY44 | L7 | True | 20000.00 | 19871.887855 | 99.4 |



BATTELLE

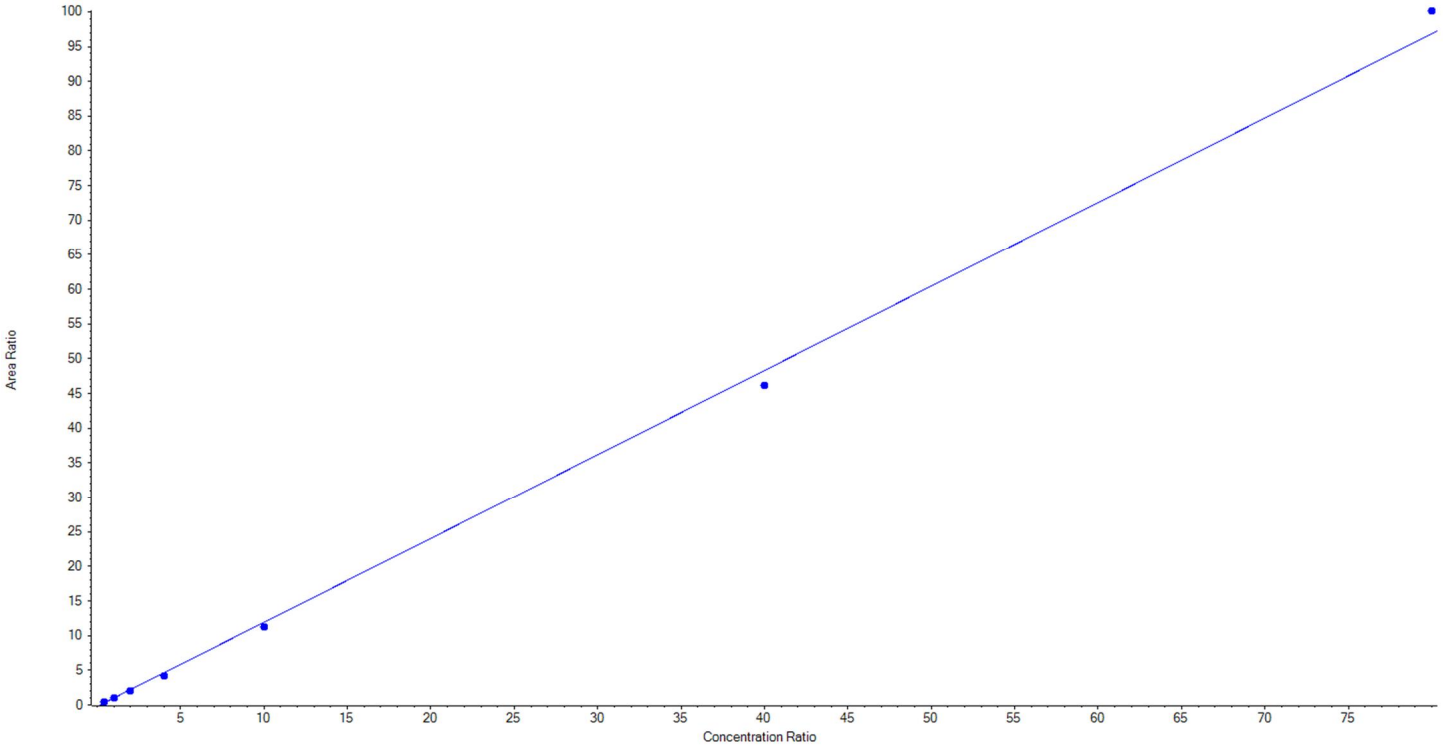
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFUnA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 563.0 / 519.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C7-PFUnA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.21353 x + -0.22259 (r = 0.99899) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 122.943043 | 122.9 |
| 3 | JY39 | L2 | True | 250.00 | 246.726851 | 98.7 |
| 4 | JY40 | L3 | True | 500.00 | 463.660604 | 92.7 |
| 5 | JY41 | L4 | True | 1000.00 | 919.395673 | 91.9 |
| 6 | JY42 | L5 | True | 2500.00 | 2369.453411 | 94.8 |
| 7 | JY43 | L6 | True | 10000.00 | 9555.457961 | 95.6 |
| 8 | JY44 | L7 | True | 20000.00 | 20672.362456 | 103.4 |



BATTELLE

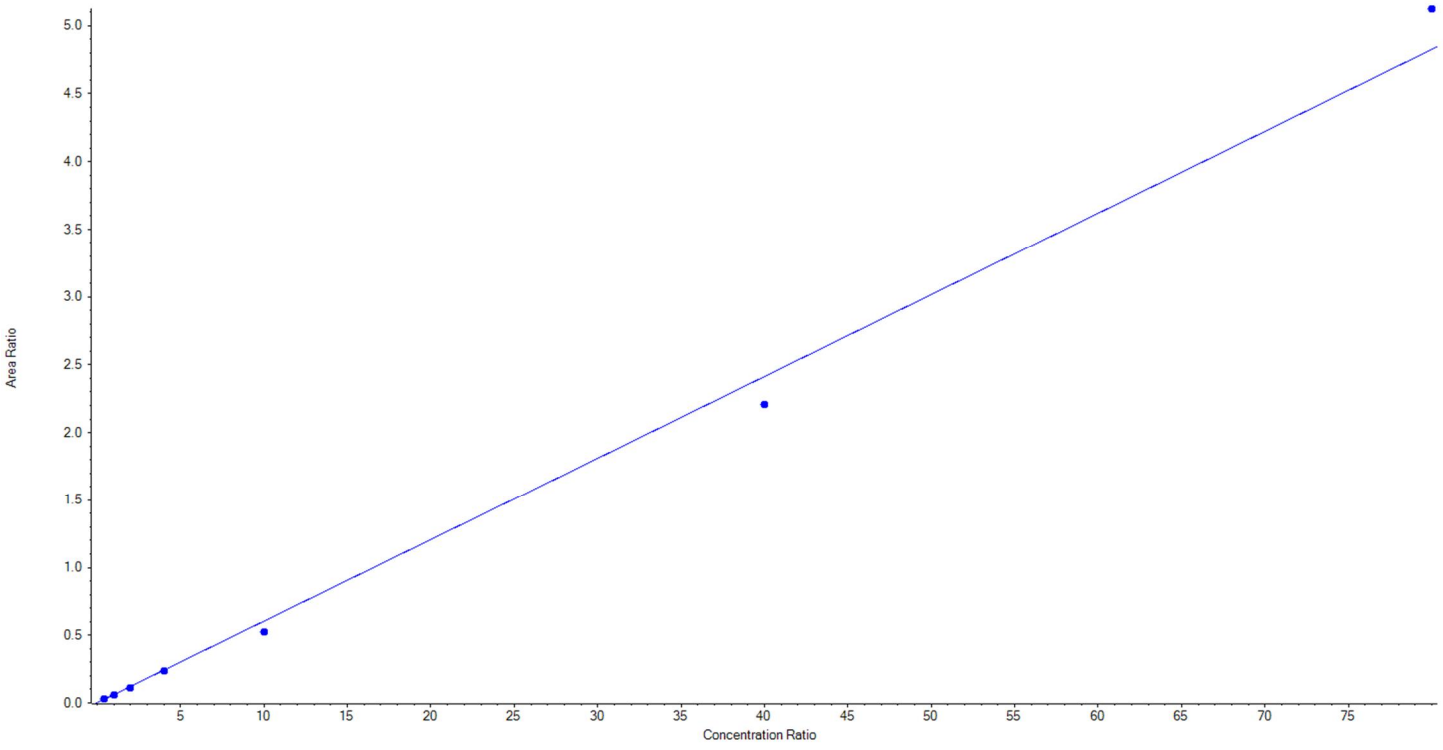
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFUnA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 563.0 / 269.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C7-PFUnA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.06032 x + 9.82959e-4 (r = 0.99675) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 129.206562 | 129.2 |
| 3 | JY39 | L2 | True | 250.00 | 241.347698 | 96.5 |
| 4 | JY40 | L3 | True | 500.00 | 467.242328 | 93.5 |
| 5 | JY41 | L4 | True | 1000.00 | 968.076678 | 96.8 |
| 6 | JY42 | L5 | True | 2500.00 | 2157.204163 | 86.3 |
| 7 | JY43 | L6 | True | 10000.00 | 9155.089249 | 91.6 |
| 8 | JY44 | L7 | True | 20000.00 | 21231.833322 | 106.2 |



BATTELLE

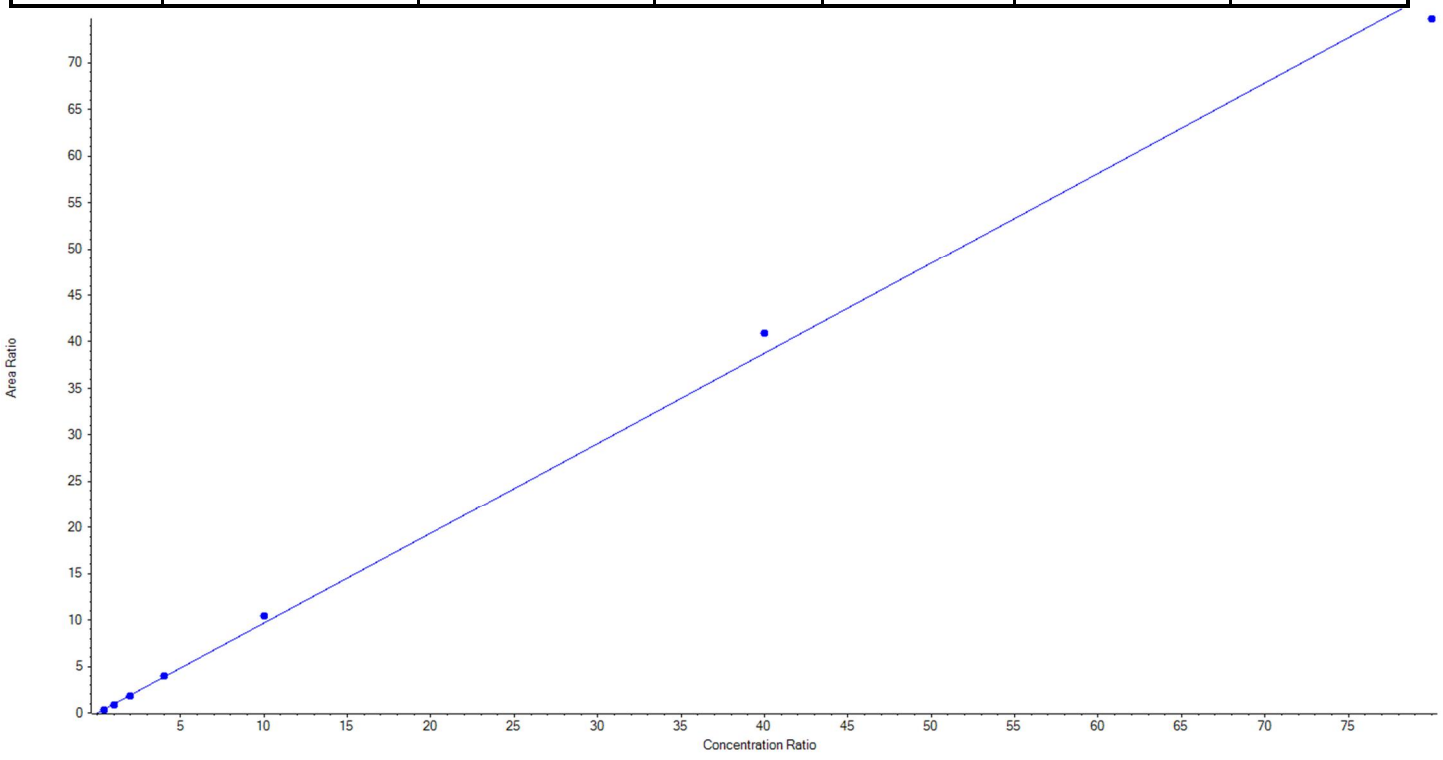
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFDoA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 613.0 / 569.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C2-PFDoA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.96946 x + -0.01373 (r = 0.99883) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 98.610714 | 98.6 |
| 3 | JY39 | L2 | True | 250.00 | 233.920658 | 93.6 |
| 4 | JY40 | L3 | True | 500.00 | 475.852120 | 95.2 |
| 5 | JY41 | L4 | True | 1000.00 | 1032.761138 | 103.3 |
| 6 | JY42 | L5 | True | 2500.00 | 2688.000463 | 107.5 |
| 7 | JY43 | L6 | True | 10000.00 | 10550.038320 | 105.5 |
| 8 | JY44 | L7 | True | 20000.00 | 19270.816586 | 96.4 |



BATTELLE

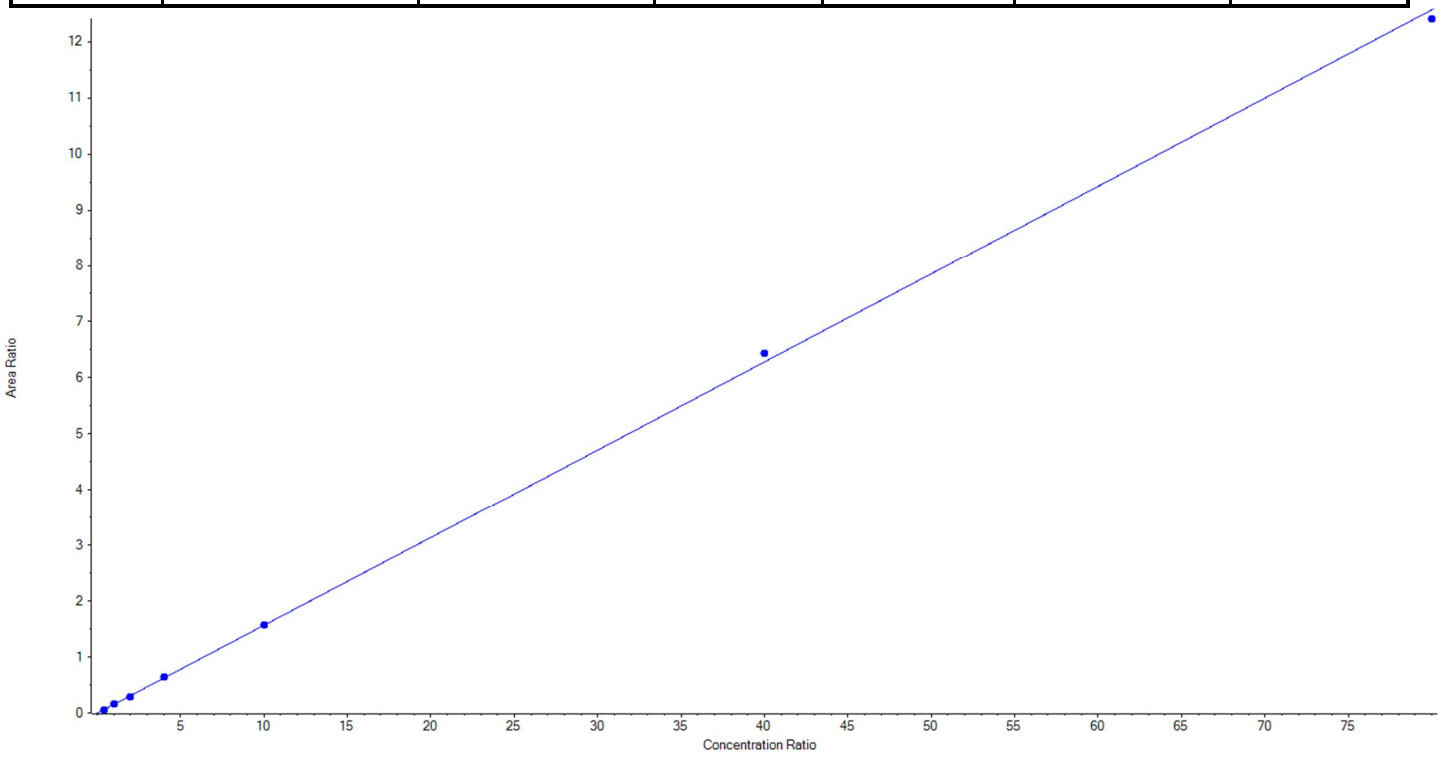
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFDoA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 613.0 / 319.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C2-PFDoA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.15718 x + -0.00485 (r = 0.99982) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 100.020562 | 100.0 |
| 3 | JY39 | L2 | True | 250.00 | 250.671630 | 100.3 |
| 4 | JY40 | L3 | True | 500.00 | 475.157931 | 95.0 |
| 5 | JY41 | L4 | True | 1000.00 | 1031.153986 | 103.1 |
| 6 | JY42 | L5 | True | 2500.00 | 2511.466237 | 100.5 |
| 7 | JY43 | L6 | True | 10000.00 | 10239.500617 | 102.4 |
| 8 | JY44 | L7 | True | 20000.00 | 19742.029037 | 98.7 |



BATTELLE

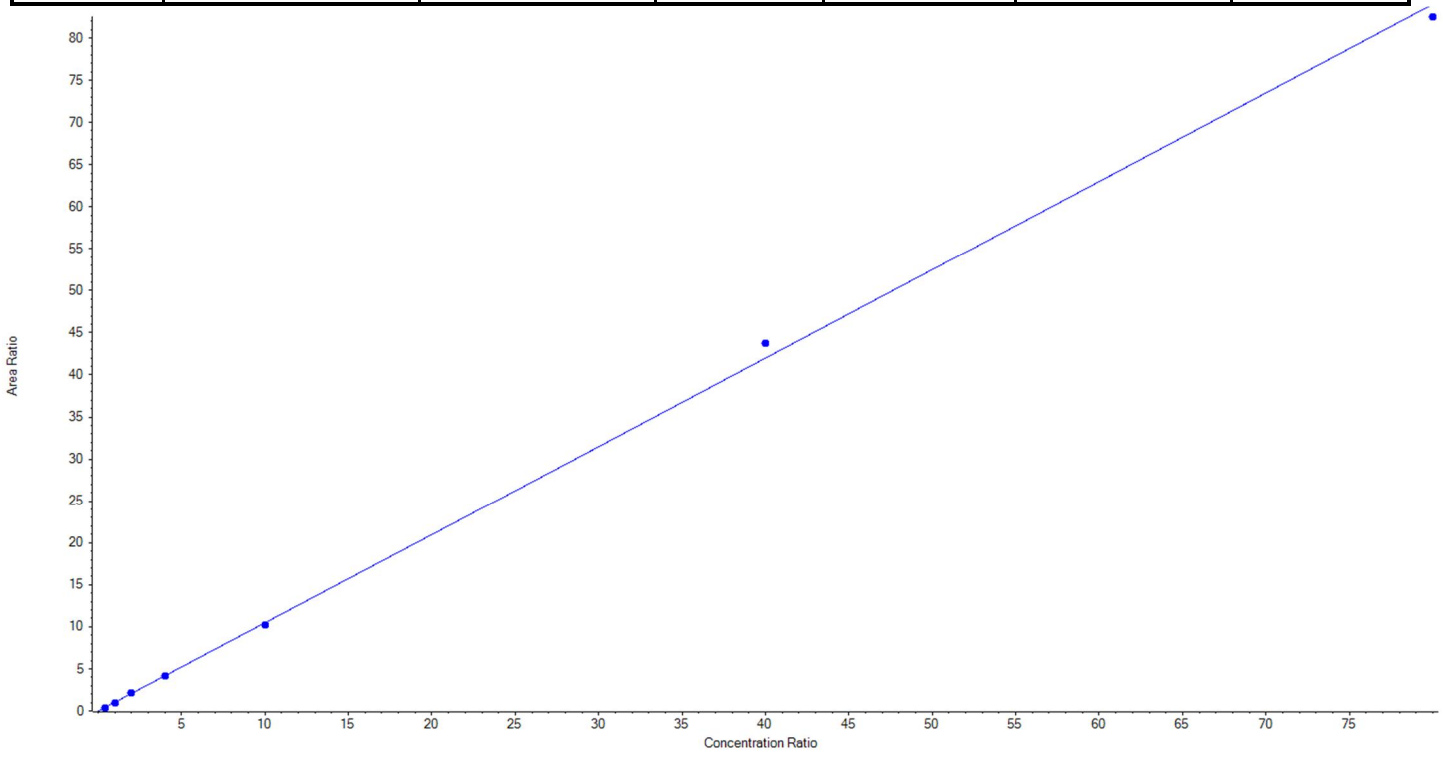
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFTrDA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 663.0 / 619.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C2-PFTeDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.05021 x + -0.02316 (r = 0.99959) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 103.989990 | 104.0 |
| 3 | JY39 | L2 | True | 250.00 | 237.901063 | 95.2 |
| 4 | JY40 | L3 | True | 500.00 | 506.941023 | 101.4 |
| 5 | JY41 | L4 | True | 1000.00 | 989.873487 | 99.0 |
| 6 | JY42 | L5 | True | 2500.00 | 2452.401261 | 98.1 |
| 7 | JY43 | L6 | True | 10000.00 | 10416.702985 | 104.2 |
| 8 | JY44 | L7 | True | 20000.00 | 19642.190190 | 98.2 |



BATTELLE

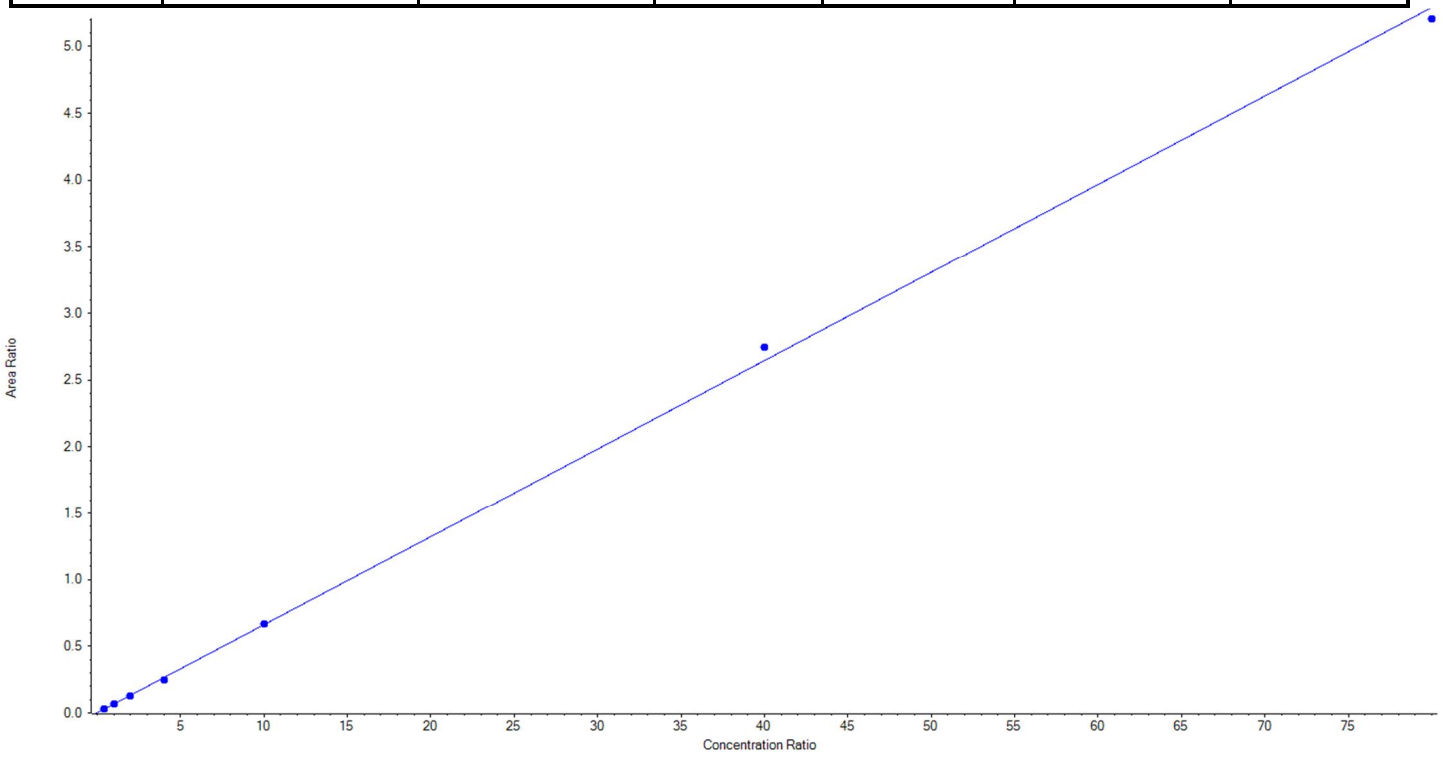
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFTrDA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 663.0 / 169.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C2-PFTeDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.06614 x + 4.21658e-4 (r = 0.99959) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 108.287462 | 108.3 |
| 3 | JY39 | L2 | True | 250.00 | 250.336593 | 100.1 |
| 4 | JY40 | L3 | True | 500.00 | 472.911739 | 94.6 |
| 5 | JY41 | L4 | True | 1000.00 | 938.882600 | 93.9 |
| 6 | JY42 | L5 | True | 2500.00 | 2523.167722 | 100.9 |
| 7 | JY43 | L6 | True | 10000.00 | 10379.703023 | 103.8 |
| 8 | JY44 | L7 | True | 20000.00 | 19676.710861 | 98.4 |



BATTELLE

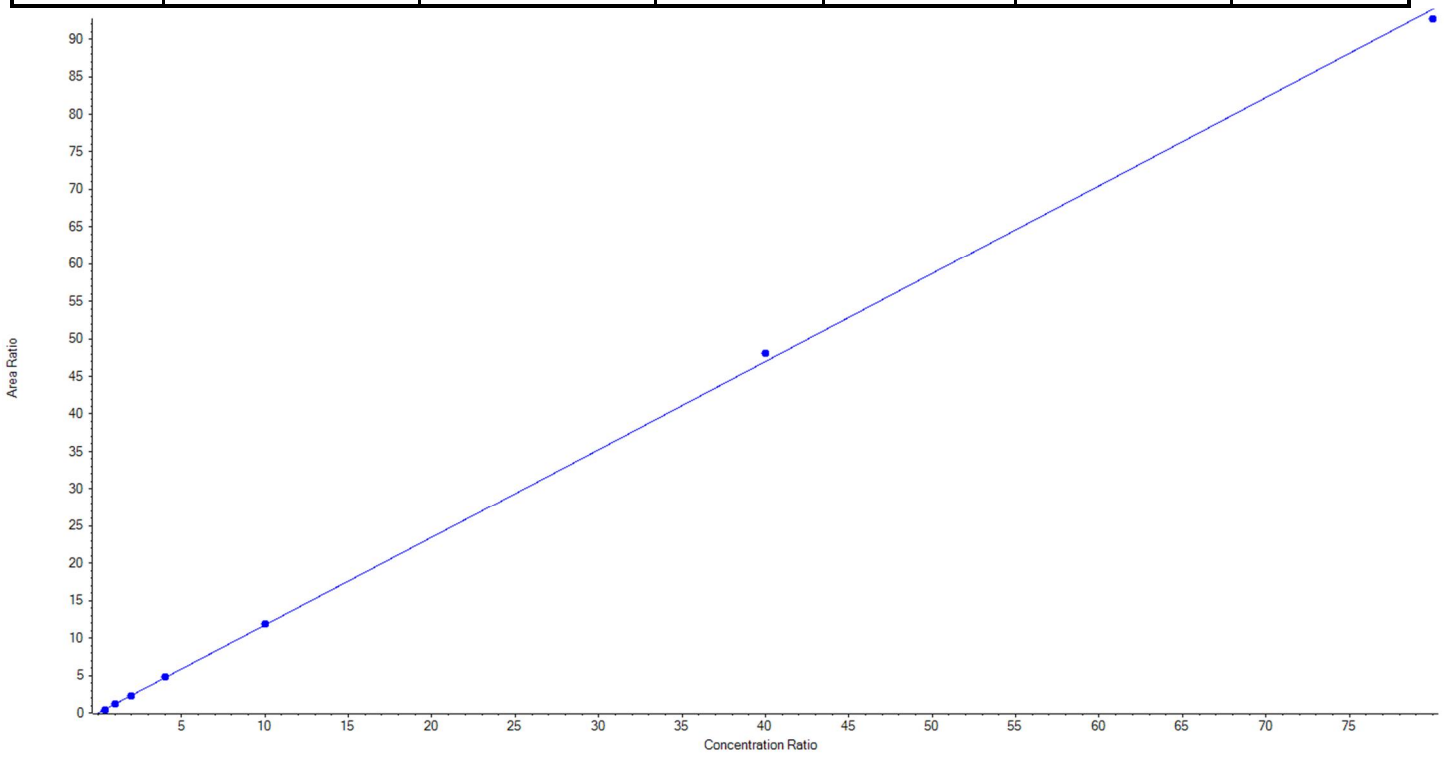
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFTeDA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 713.0 / 669.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C2-PFTeDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.17488 x + -0.00776 (r = 0.99984) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 98.523721 | 98.5 |
| 3 | JY39 | L2 | True | 250.00 | 248.858327 | 99.5 |
| 4 | JY40 | L3 | True | 500.00 | 490.541916 | 98.1 |
| 5 | JY41 | L4 | True | 1000.00 | 1012.450240 | 101.3 |
| 6 | JY42 | L5 | True | 2500.00 | 2540.117327 | 101.6 |
| 7 | JY43 | L6 | True | 10000.00 | 10235.461016 | 102.4 |
| 8 | JY44 | L7 | True | 20000.00 | 19724.047452 | 98.6 |



BATTELLE

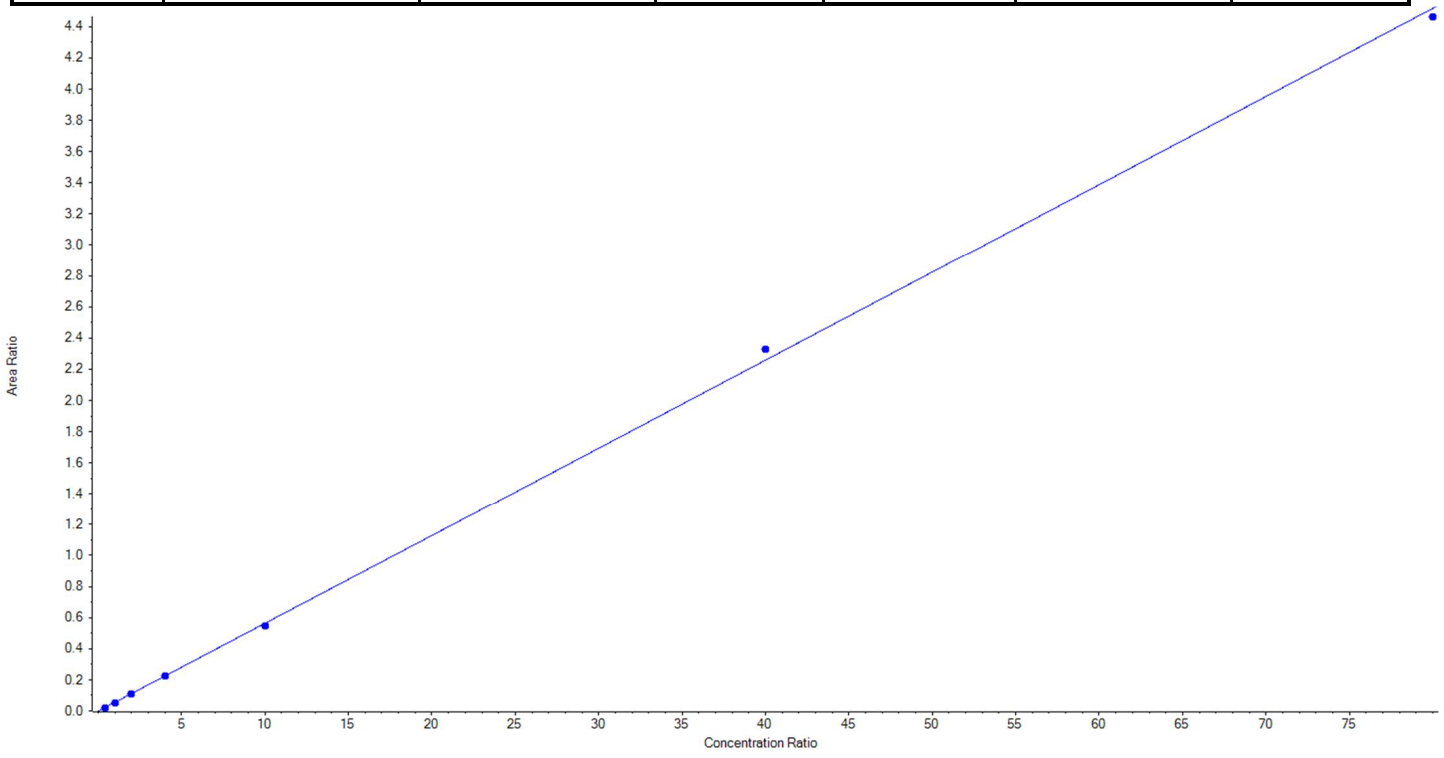
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFTeDA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 713.0 / 169.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C2-PFTeDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.05649 x + -0.00122 (r = 0.99976) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 103.942641 | 103.9 |
| 3 | JY39 | L2 | True | 250.00 | 243.654642 | 97.5 |
| 4 | JY40 | L3 | True | 500.00 | 499.075940 | 99.8 |
| 5 | JY41 | L4 | True | 1000.00 | 993.942996 | 99.4 |
| 6 | JY42 | L5 | True | 2500.00 | 2435.881968 | 97.4 |
| 7 | JY43 | L6 | True | 10000.00 | 10316.645427 | 103.2 |
| 8 | JY44 | L7 | True | 20000.00 | 19756.856386 | 98.8 |



BATTELLE

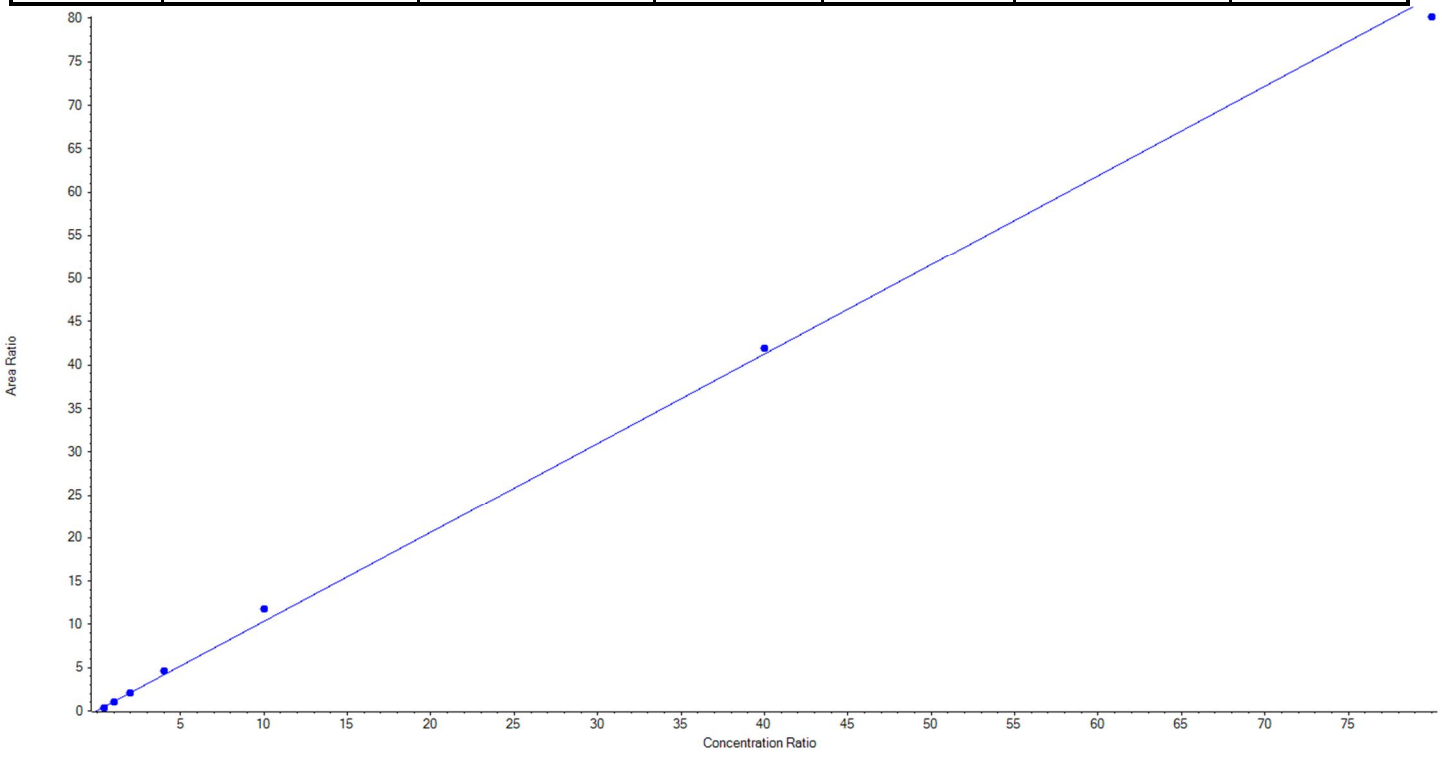
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | NMeFOSAA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 570.0 / 419.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | d3-MeFOSAA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.03070 x + 0.04450 (r = 0.99877) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 83.446543 | 83.5 |
| 3 | JY39 | L2 | True | 250.00 | 244.399054 | 97.8 |
| 4 | JY40 | L3 | True | 500.00 | 483.064727 | 96.6 |
| 5 | JY41 | L4 | True | 1000.00 | 1097.700385 | 109.8 |
| 6 | JY42 | L5 | True | 2500.00 | 2838.922966 | 113.6 |
| 7 | JY43 | L6 | True | 10000.00 | 10168.320127 | 101.7 |
| 8 | JY44 | L7 | True | 20000.00 | 19434.146196 | 97.2 |



BATTELLE

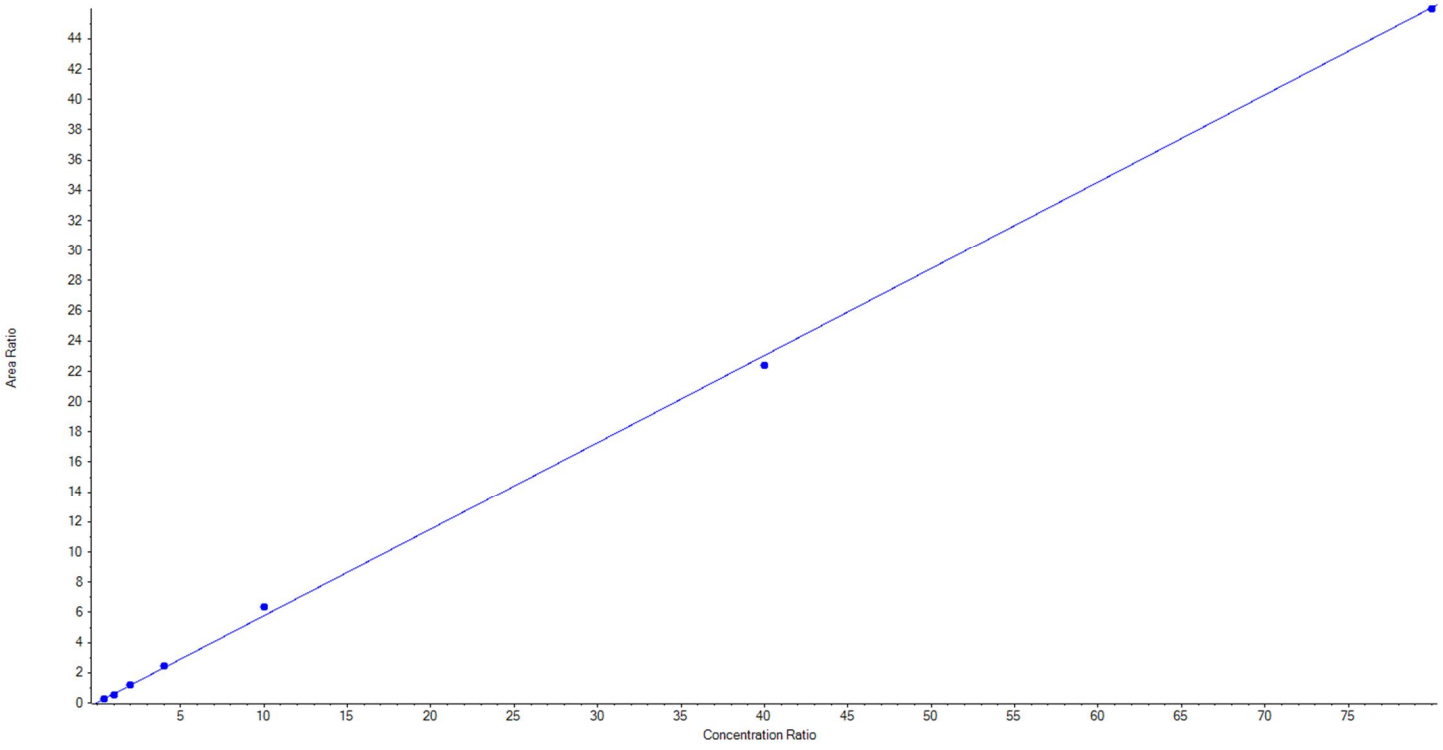
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | NMeFOSAA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 570.0 / 512.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | d3-MeFOSAA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.57549 x + 0.02501 (r = 0.99932) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 94.256719 | 94.3 |
| 3 | JY39 | L2 | True | 250.00 | 226.726746 | 90.7 |
| 4 | JY40 | L3 | True | 500.00 | 502.520187 | 100.5 |
| 5 | JY41 | L4 | True | 1000.00 | 1068.138462 | 106.8 |
| 6 | JY42 | L5 | True | 2500.00 | 2765.525131 | 110.6 |
| 7 | JY43 | L6 | True | 10000.00 | 9729.906041 | 97.3 |
| 8 | JY44 | L7 | True | 20000.00 | 19962.926715 | 99.8 |



BATTELLE

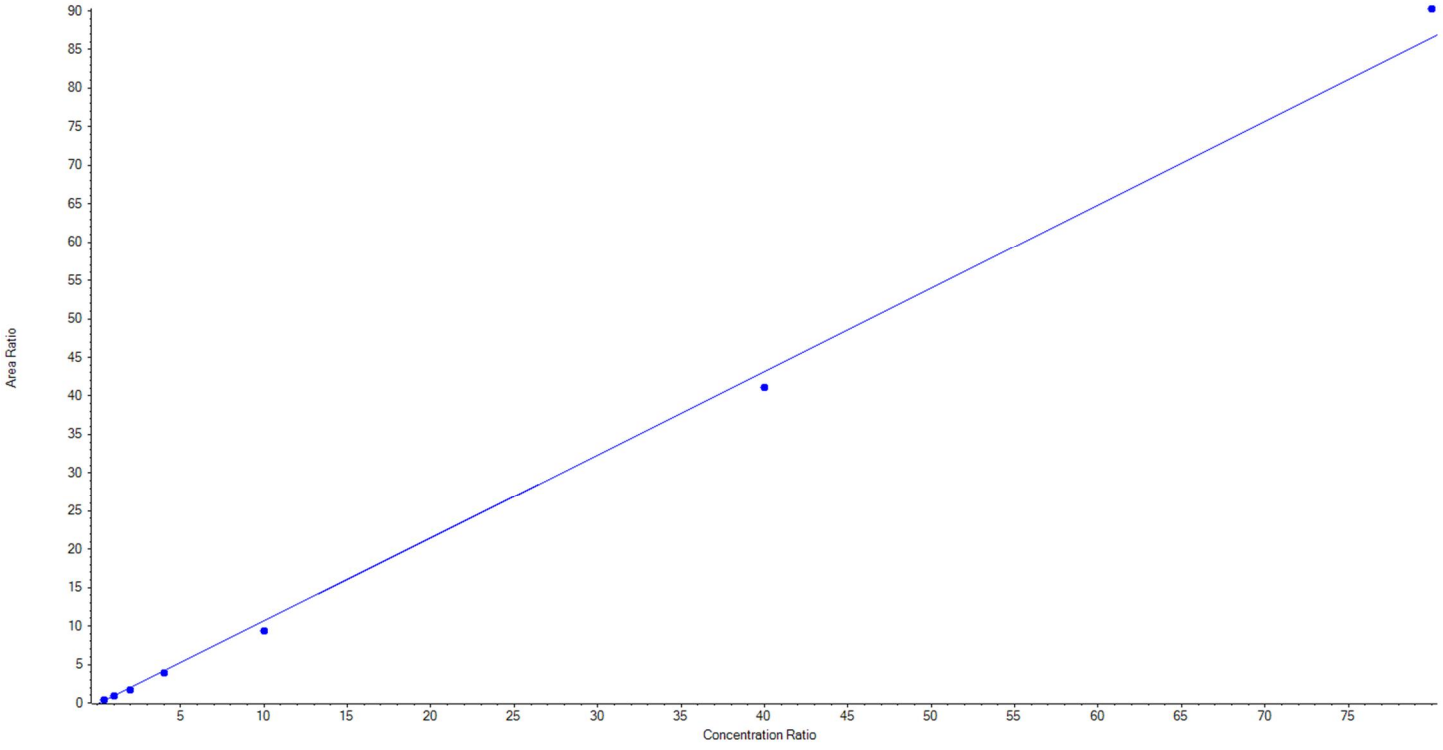
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | NEtFOSAA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 584.0 / 419.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | d5-EtFOSAA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.08361 x + -0.17934 (r = 0.99815) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 127.151255 | 127.2 |
| 3 | JY39 | L2 | True | 250.00 | 265.679934 | 106.3 |
| 4 | JY40 | L3 | True | 500.00 | 423.940233 | 84.8 |
| 5 | JY41 | L4 | True | 1000.00 | 937.778212 | 93.8 |
| 6 | JY42 | L5 | True | 2500.00 | 2212.318765 | 88.5 |
| 7 | JY43 | L6 | True | 10000.00 | 9520.499075 | 95.2 |
| 8 | JY44 | L7 | True | 20000.00 | 20862.632526 | 104.3 |



BATTELLE

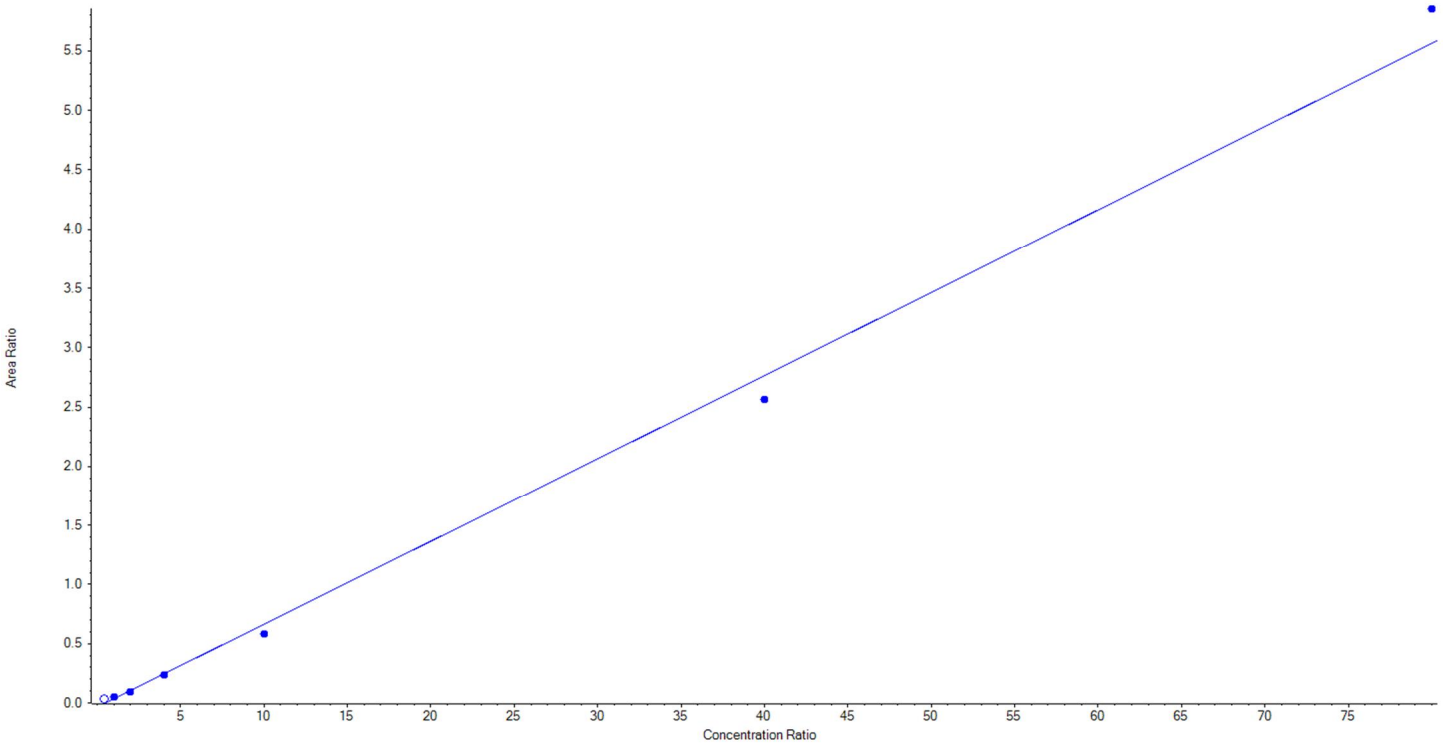
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | NEtFOSAA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 584.0 / 483.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | d5-EtFOSAA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.06998 x + -0.03555 (r = 0.99717) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | False | 100.00 | 236.281227 | 236.3 |
| 3 | JY39 | L2 | True | 250.00 | 319.753372 | 127.9 |
| 4 | JY40 | L3 | True | 500.00 | 443.979478 | 88.8 |
| 5 | JY41 | L4 | True | 1000.00 | 974.254801 | 97.4 |
| 6 | JY42 | L5 | True | 2500.00 | 2197.277628 | 87.9 |
| 7 | JY43 | L6 | True | 10000.00 | 9282.499347 | 92.8 |
| 8 | JY44 | L7 | True | 20000.00 | 21032.235373 | 105.2 |



BATTELLE

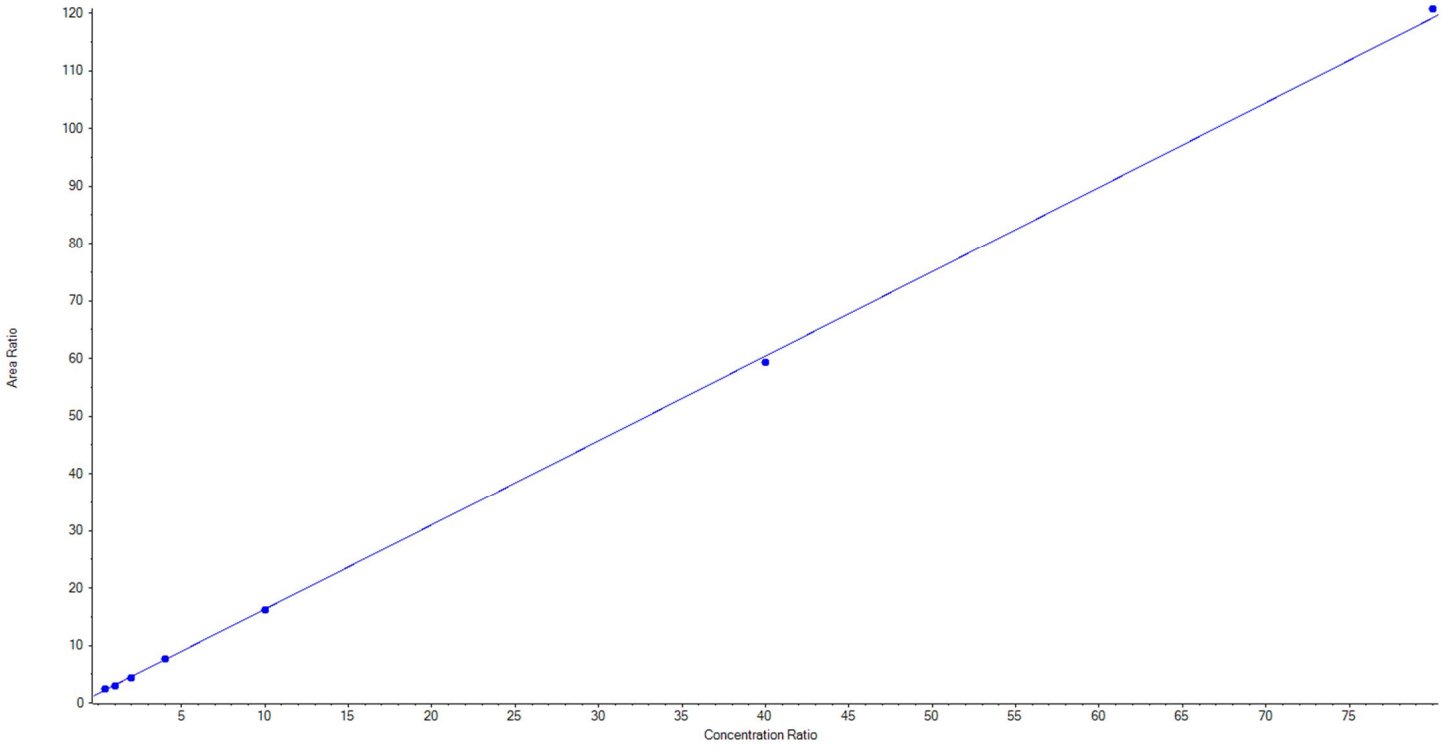
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:45:08 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFBA | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 213.0 / 169.0 | **Result Table** | 18-0500_BASE_A |
| **Internal Standard** | 13C4-PFBA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:36:54 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.46946 x + 1.63390 (r = 0.99961) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 124.856664 | 124.9 |
| 3 | JY39 | L2 | True | 250.00 | 211.435722 | 84.6 |
| 4 | JY40 | L3 | True | 500.00 | 452.995070 | 90.6 |
| 5 | JY41 | L4 | True | 1000.00 | 1019.166566 | 101.9 |
| 6 | JY42 | L5 | True | 2500.00 | 2465.258691 | 98.6 |
| 7 | JY43 | L6 | True | 10000.00 | 9812.318480 | 98.1 |
| 8 | JY44 | L7 | True | 20000.00 | 20263.968808 | 101.3 |



BATTELLE

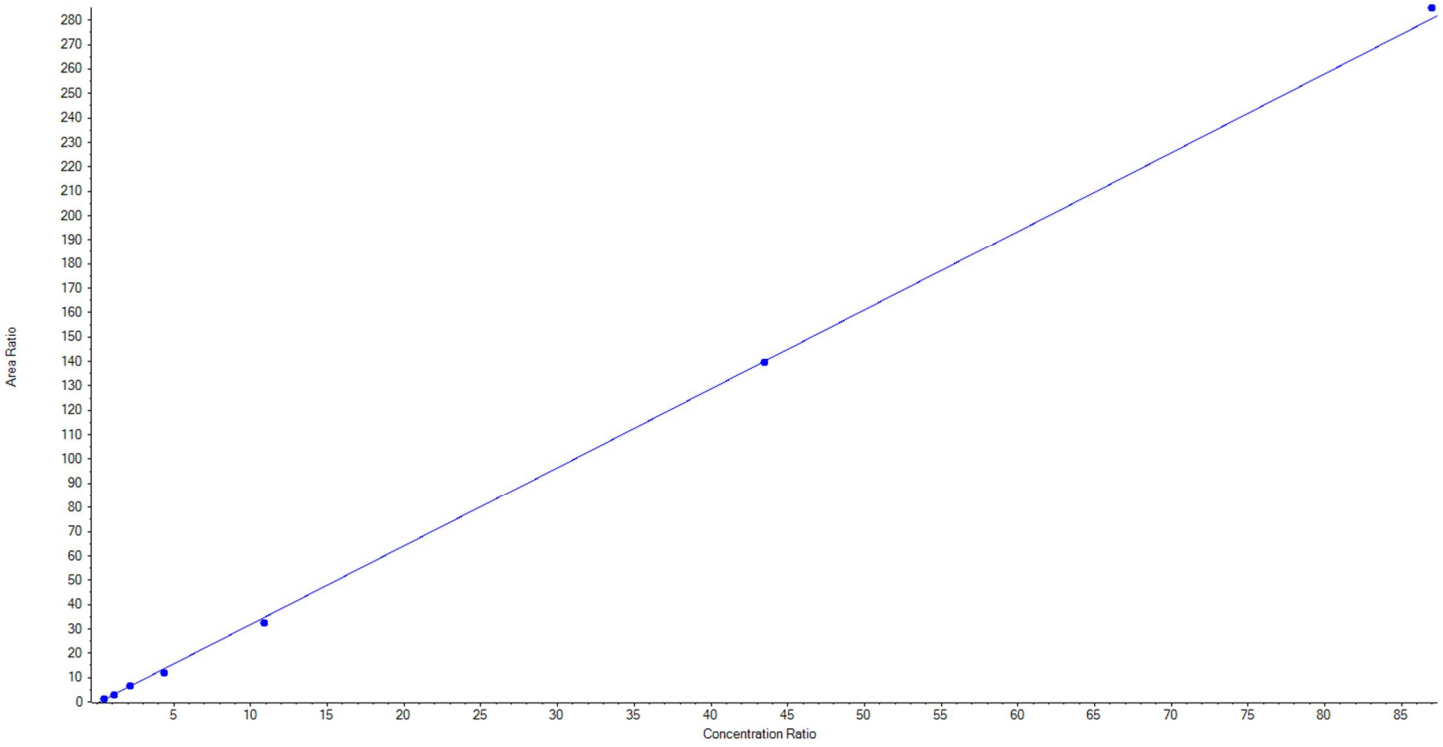
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFBS_1 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 298.9 / 80.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C3-PFBS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 3.23171 x + -0.49806 (r = 0.99947) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 101.00 | 119.143551 | 118.0 |
| 17 | JY39 | L2 | True | 252.50 | 254.701746 | 100.9 |
| 18 | JY40 | L3 | True | 505.00 | 497.430653 | 98.5 |
| 19 | JY41 | L4 | True | 1010.00 | 890.457094 | 88.2 |
| 20 | JY42 | L5 | True | 2525.00 | 2357.071583 | 93.4 |
| 21 | JY43 | L6 | True | 10100.00 | 10057.514027 | 99.6 |
| 22 | JY44 | L7 | True | 20200.00 | 20517.181346 | 101.6 |



BATTELLE

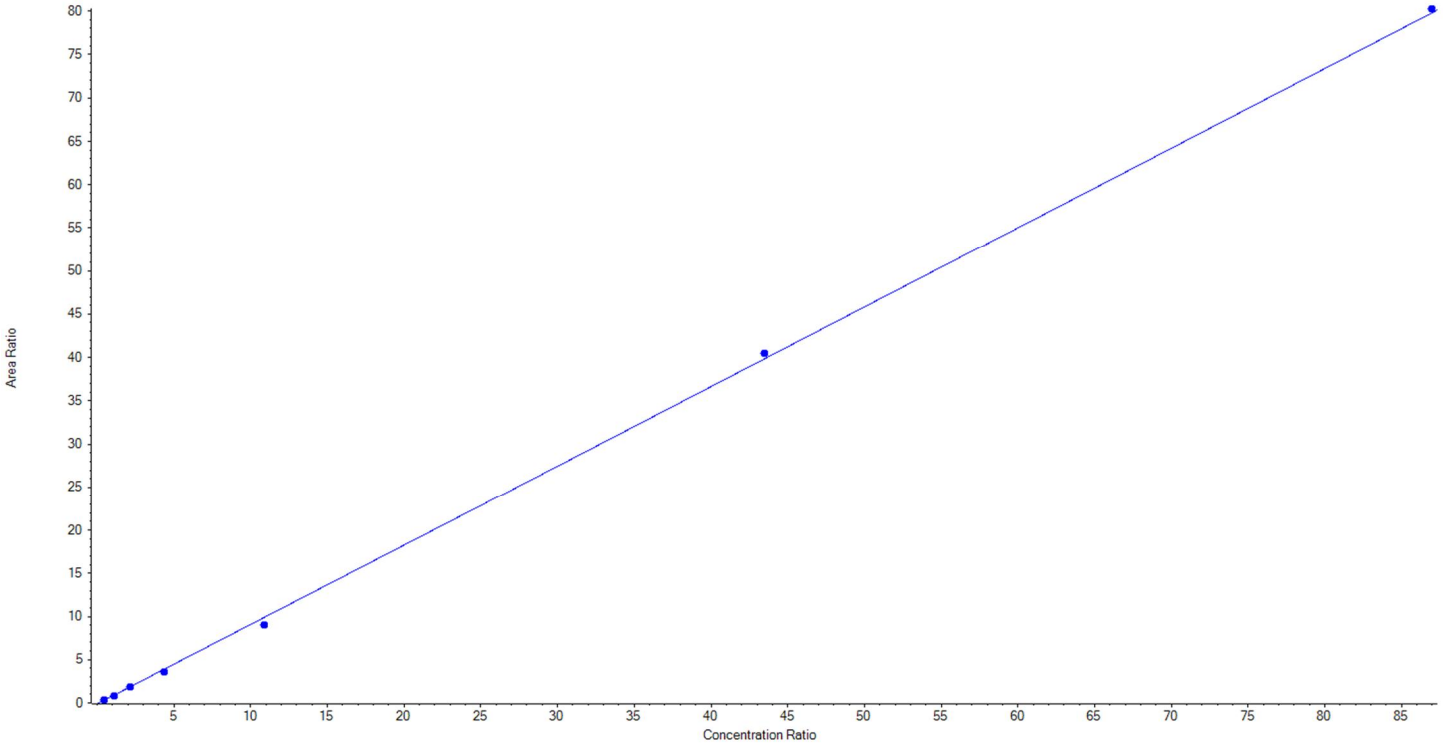
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFBS_2 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 298.9 / 99.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C3-PFBS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.91866 x + -0.11165 (r = 0.99952) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 101.00 | 117.630528 | 116.5 |
| 17 | JY39 | L2 | True | 252.50 | 244.365287 | 96.8 |
| 18 | JY40 | L3 | True | 505.00 | 510.228071 | 101.0 |
| 19 | JY41 | L4 | True | 1010.00 | 928.235183 | 91.9 |
| 20 | JY42 | L5 | True | 2525.00 | 2313.575234 | 91.6 |
| 21 | JY43 | L6 | True | 10100.00 | 10262.777442 | 101.6 |
| 22 | JY44 | L7 | True | 20200.00 | 20316.688256 | 100.6 |



BATTELLE

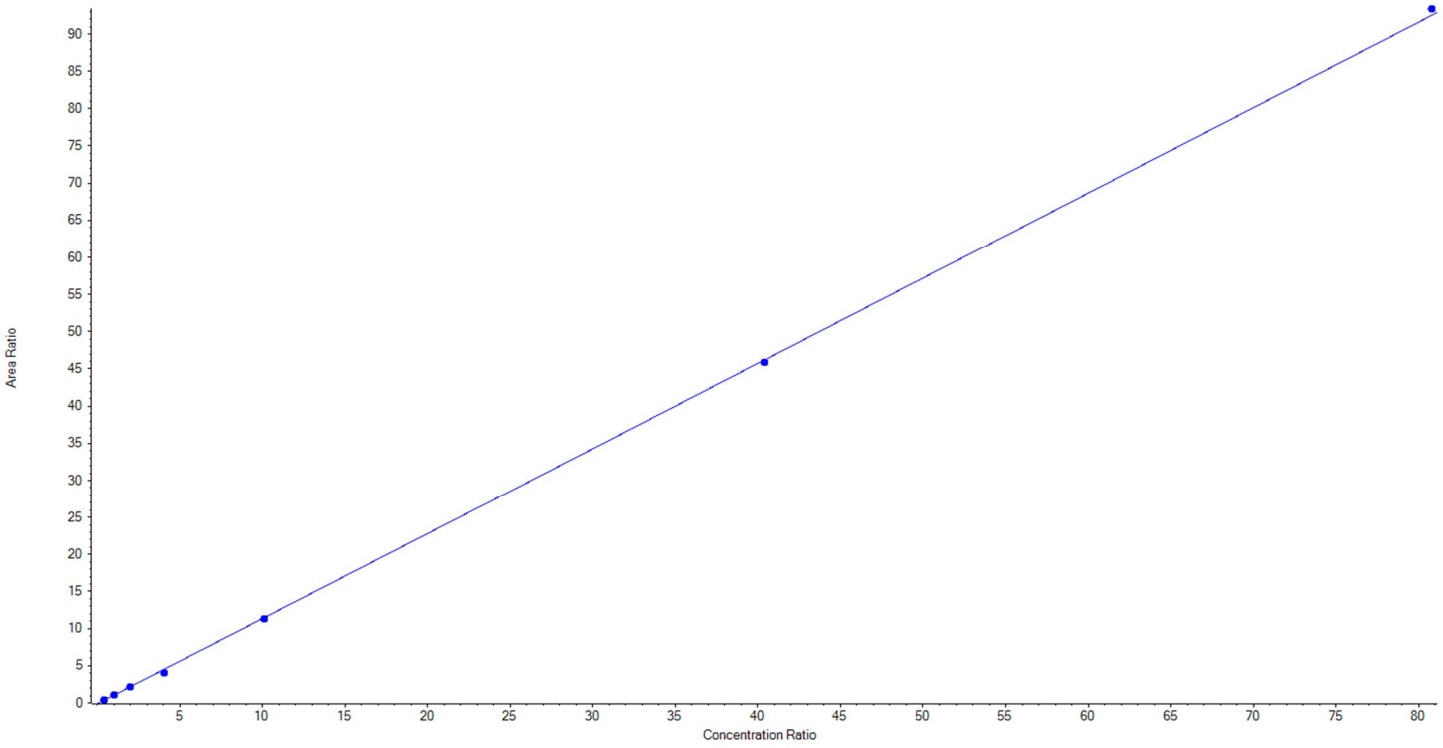
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHxA_1 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 313.0 / 269.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C5-PFHxA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.14644 x + -0.12526 (r = 0.99979) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 101.00 | 114.255254 | 113.1 |
| 17 | JY39 | L2 | True | 252.50 | 248.825405 | 98.5 |
| 18 | JY40 | L3 | True | 505.00 | 498.762780 | 98.8 |
| 19 | JY41 | L4 | True | 1010.00 | 916.052278 | 90.7 |
| 20 | JY42 | L5 | True | 2525.00 | 2487.580680 | 98.5 |
| 21 | JY43 | L6 | True | 10100.00 | 10042.691010 | 99.4 |
| 22 | JY44 | L7 | True | 20200.00 | 20385.332592 | 100.9 |



BATTELLE

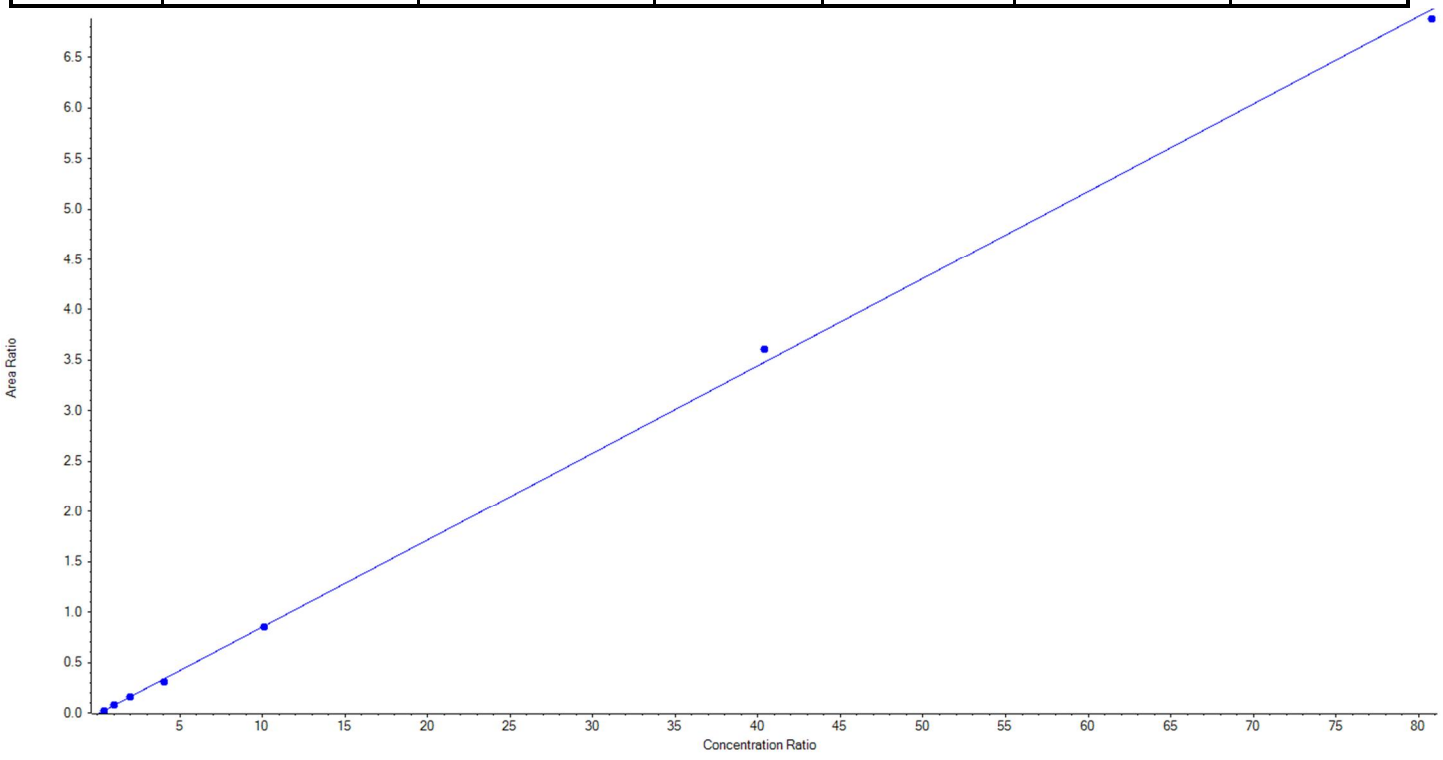
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHxA_2 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 313.0 / 119.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C5-PFHxA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.08646 x + -0.01325 (r = 0.99955) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 101.00 | 100.073175 | 99.1 |
| 17 | JY39 | L2 | True | 252.50 | 280.317758 | 111.0 |
| 18 | JY40 | L3 | True | 505.00 | 491.197324 | 97.3 |
| 19 | JY41 | L4 | True | 1010.00 | 917.039732 | 90.8 |
| 20 | JY42 | L5 | True | 2525.00 | 2514.854222 | 99.6 |
| 21 | JY43 | L6 | True | 10100.00 | 10462.405295 | 103.6 |
| 22 | JY44 | L7 | True | 20200.00 | 19927.612494 | 98.7 |



BATTELLE

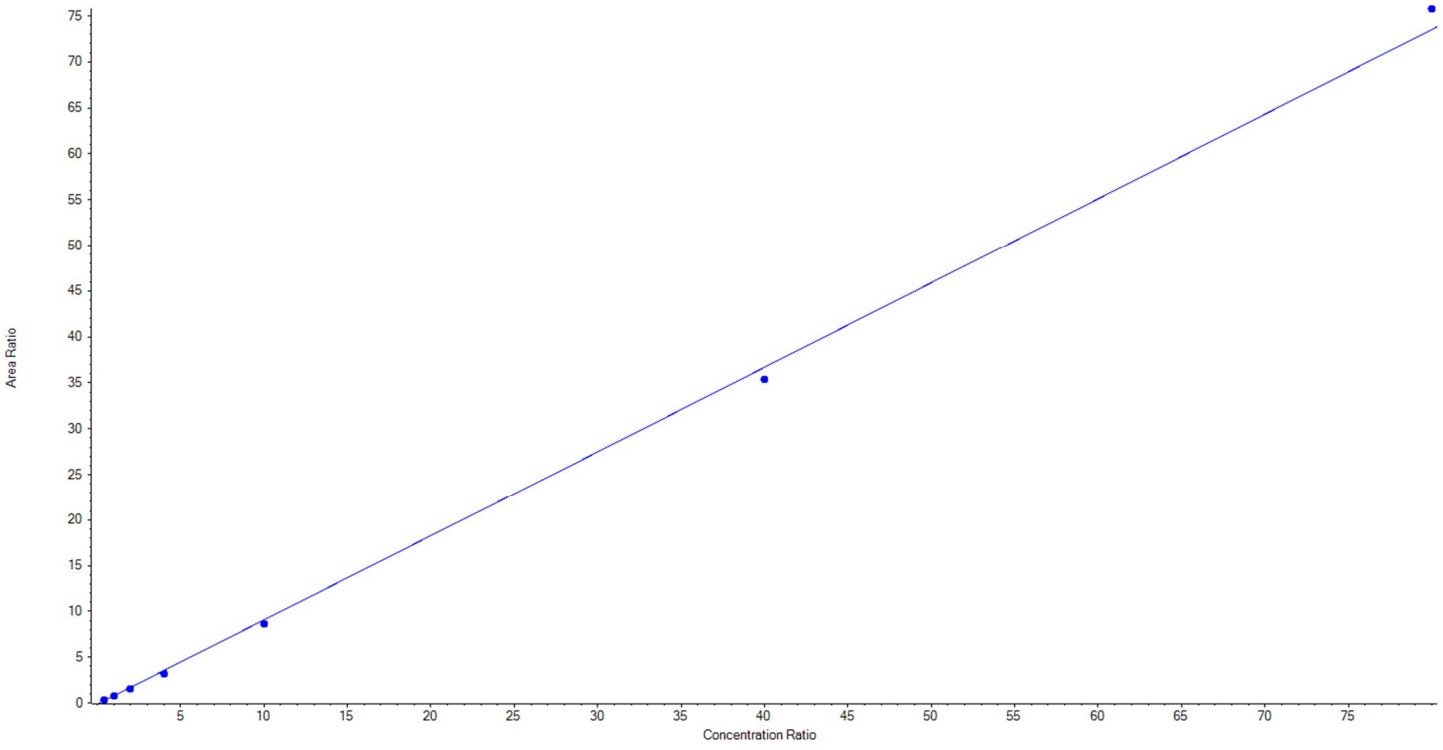
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHpA_1 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 363.0 / 319.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C8-PFOA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.92088 x + -0.14757 (r = 0.99907) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 100.00 | 124.537268 | 124.5 |
| 17 | JY39 | L2 | True | 250.00 | 251.461407 | 100.6 |
| 18 | JY40 | L3 | True | 500.00 | 453.046919 | 90.6 |
| 19 | JY41 | L4 | True | 1000.00 | 897.053998 | 89.7 |
| 20 | JY42 | L5 | True | 2500.00 | 2378.797571 | 95.2 |
| 21 | JY43 | L6 | True | 10000.00 | 9637.193632 | 96.4 |
| 22 | JY44 | L7 | True | 20000.00 | 20607.909205 | 103.0 |



BATTELLE

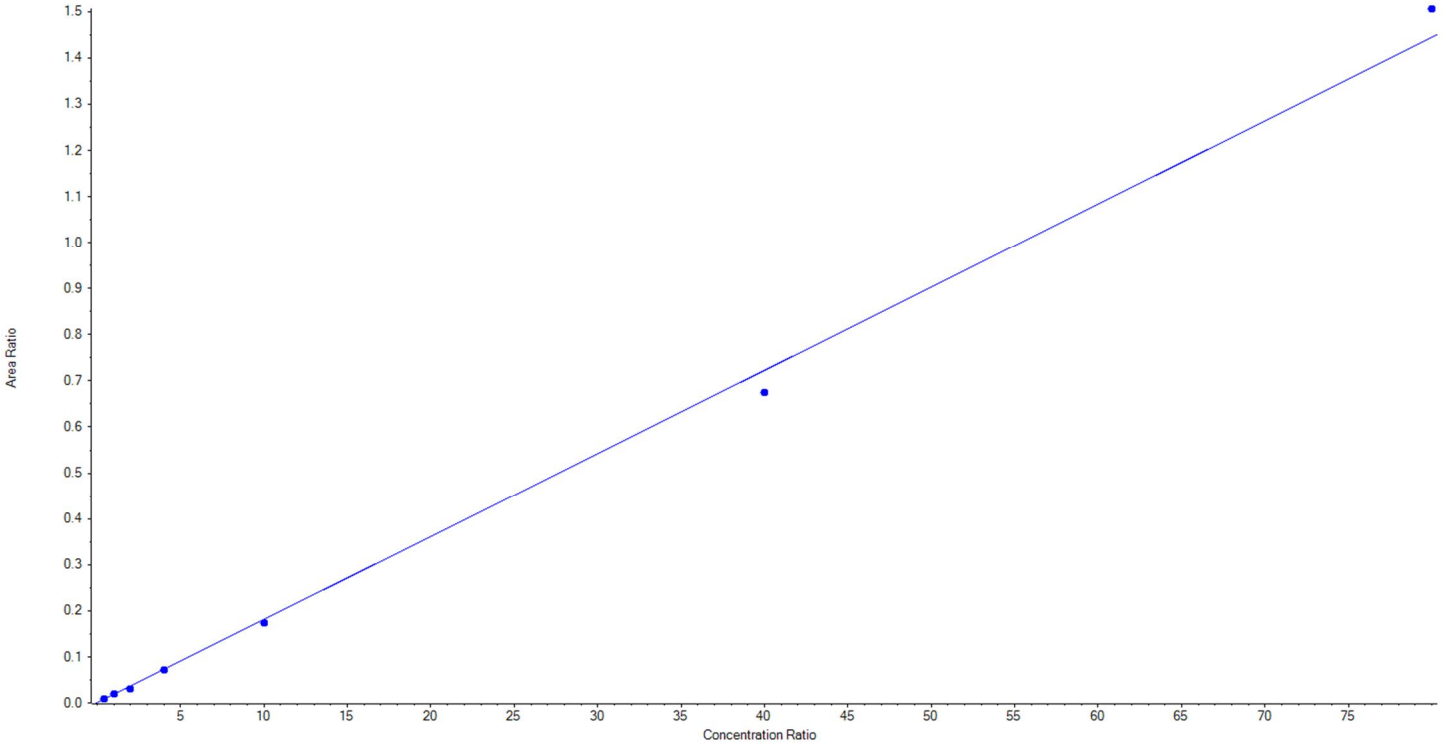
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHpA_2 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 363.0 / 169.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C8-PFOA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.01805 x + 7.13759e-4 (r = 0.99827) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 100.00 | 124.809303 | 124.8 |
| 17 | JY39 | L2 | True | 250.00 | 253.944317 | 101.6 |
| 18 | JY40 | L3 | True | 500.00 | 405.808337 | 81.2 |
| 19 | JY41 | L4 | True | 1000.00 | 987.656245 | 98.8 |
| 20 | JY42 | L5 | True | 2500.00 | 2405.202025 | 96.2 |
| 21 | JY43 | L6 | True | 10000.00 | 9322.939718 | 93.2 |
| 22 | JY44 | L7 | True | 20000.00 | 20849.640054 | 104.3 |



BATTELLE

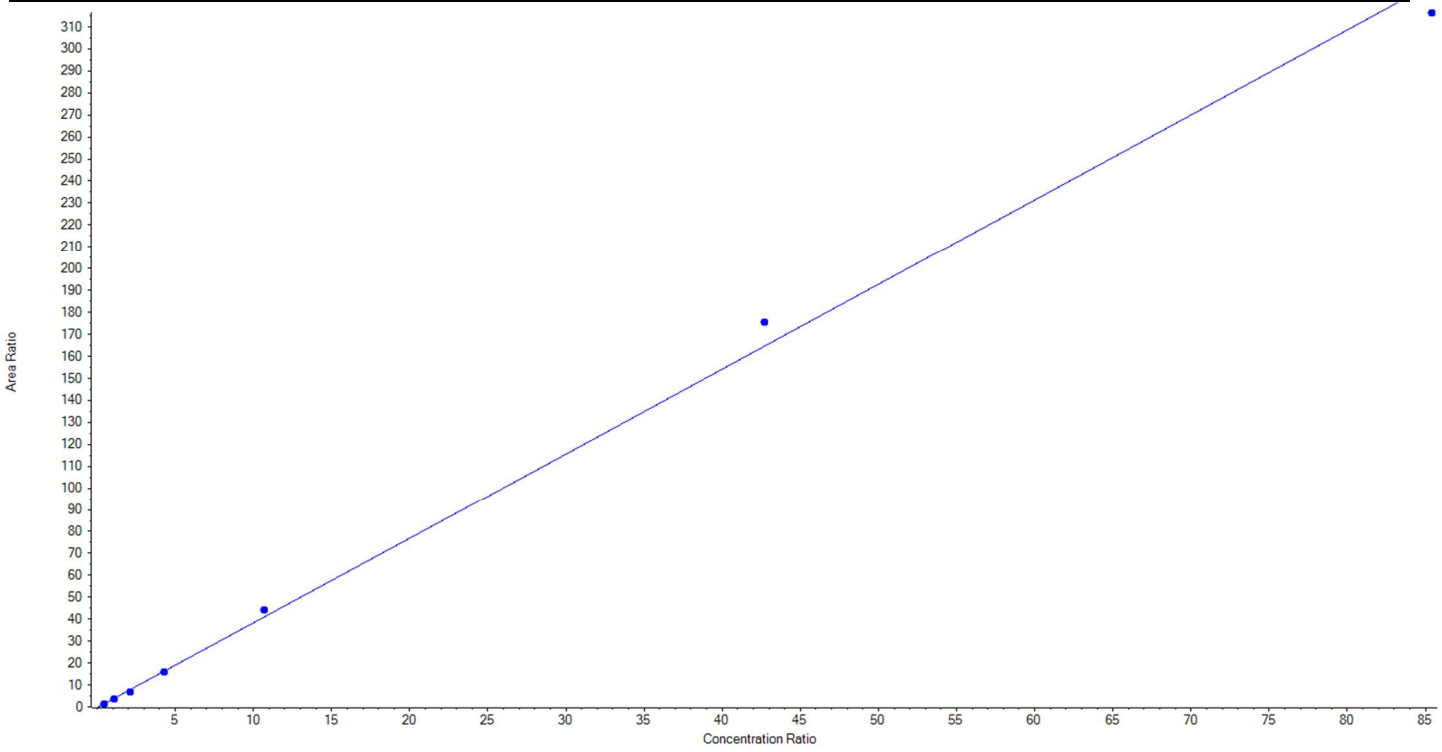
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHxS_1 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 399.0 / 80.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C3-PFHxS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 3.86052 x + -0.26493 (r = 0.99837) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 101.00 | 106.833074 | 105.8 |
| 17 | JY39 | L2 | True | 252.50 | 247.811371 | 98.1 |
| 18 | JY40 | L3 | True | 505.00 | 438.291325 | 86.8 |
| 19 | JY41 | L4 | True | 1010.00 | 993.703461 | 98.4 |
| 20 | JY42 | L5 | True | 2525.00 | 2730.783046 | 108.2 |
| 21 | JY43 | L6 | True | 10100.00 | 10780.411132 | 106.7 |
| 22 | JY44 | L7 | True | 20200.00 | 19395.666591 | 96.0 |



BATTELLE

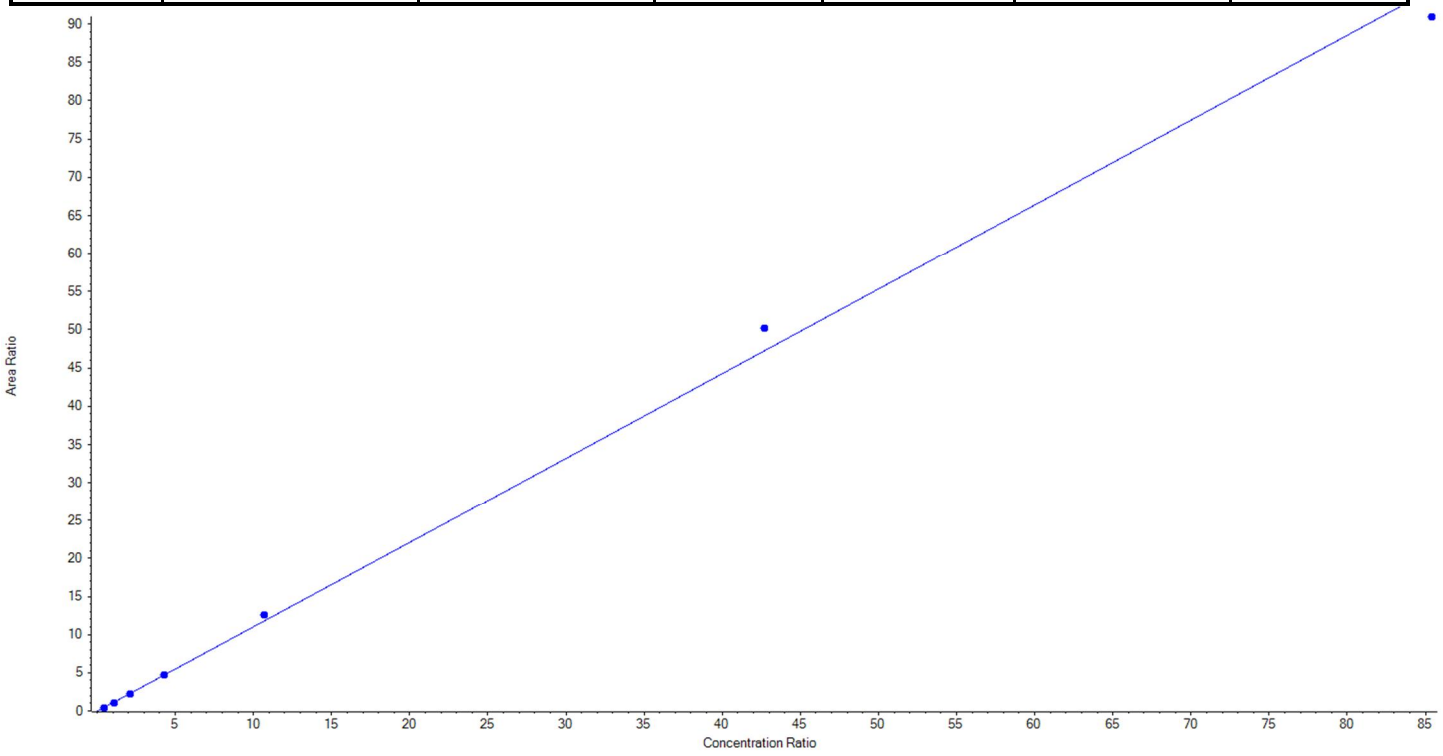
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHxS_2 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 399.0 / 99.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C3-PFHxS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.10734 x + -0.05053 (r = 0.99873) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 101.00 | 99.387183 | 98.4 |
| 17 | JY39 | L2 | True | 252.50 | 244.724335 | 96.9 |
| 18 | JY40 | L3 | True | 505.00 | 475.019404 | 94.1 |
| 19 | JY41 | L4 | True | 1010.00 | 1024.638250 | 101.5 |
| 20 | JY42 | L5 | True | 2525.00 | 2697.465775 | 106.8 |
| 21 | JY43 | L6 | True | 10100.00 | 10719.084226 | 106.1 |
| 22 | JY44 | L7 | True | 20200.00 | 19433.180829 | 96.2 |



BATTELLE

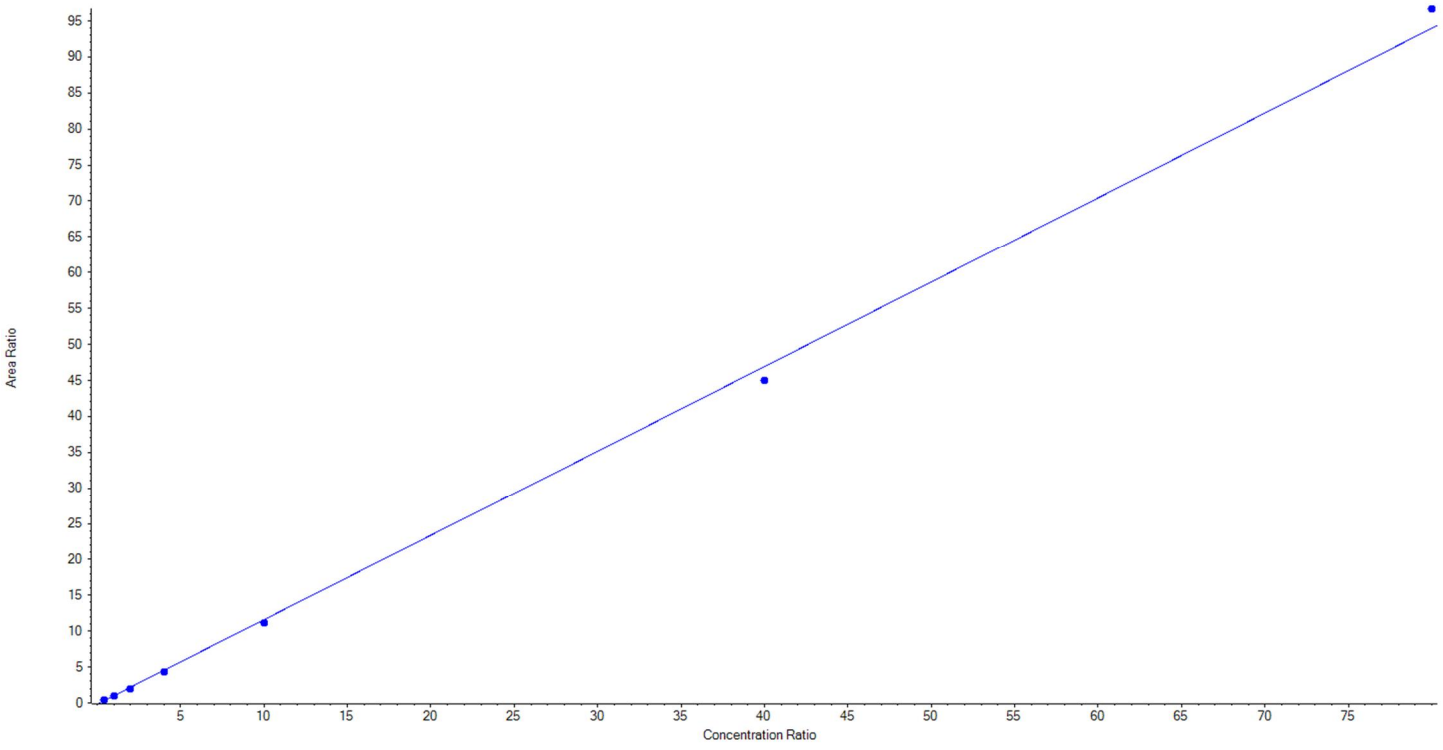
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFOA_1 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 413.0 / 369.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C8-PFOA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.17689 x + -0.16720 (r = 0.99925) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 100.00 | 122.378104 | 122.4 |
| 17 | JY39 | L2 | True | 250.00 | 239.701480 | 95.9 |
| 18 | JY40 | L3 | True | 500.00 | 455.994933 | 91.2 |
| 19 | JY41 | L4 | True | 1000.00 | 952.338996 | 95.2 |
| 20 | JY42 | L5 | True | 2500.00 | 2412.042978 | 96.5 |
| 21 | JY43 | L6 | True | 10000.00 | 9597.796282 | 96.0 |
| 22 | JY44 | L7 | True | 20000.00 | 20569.747227 | 102.9 |



BATTELLE

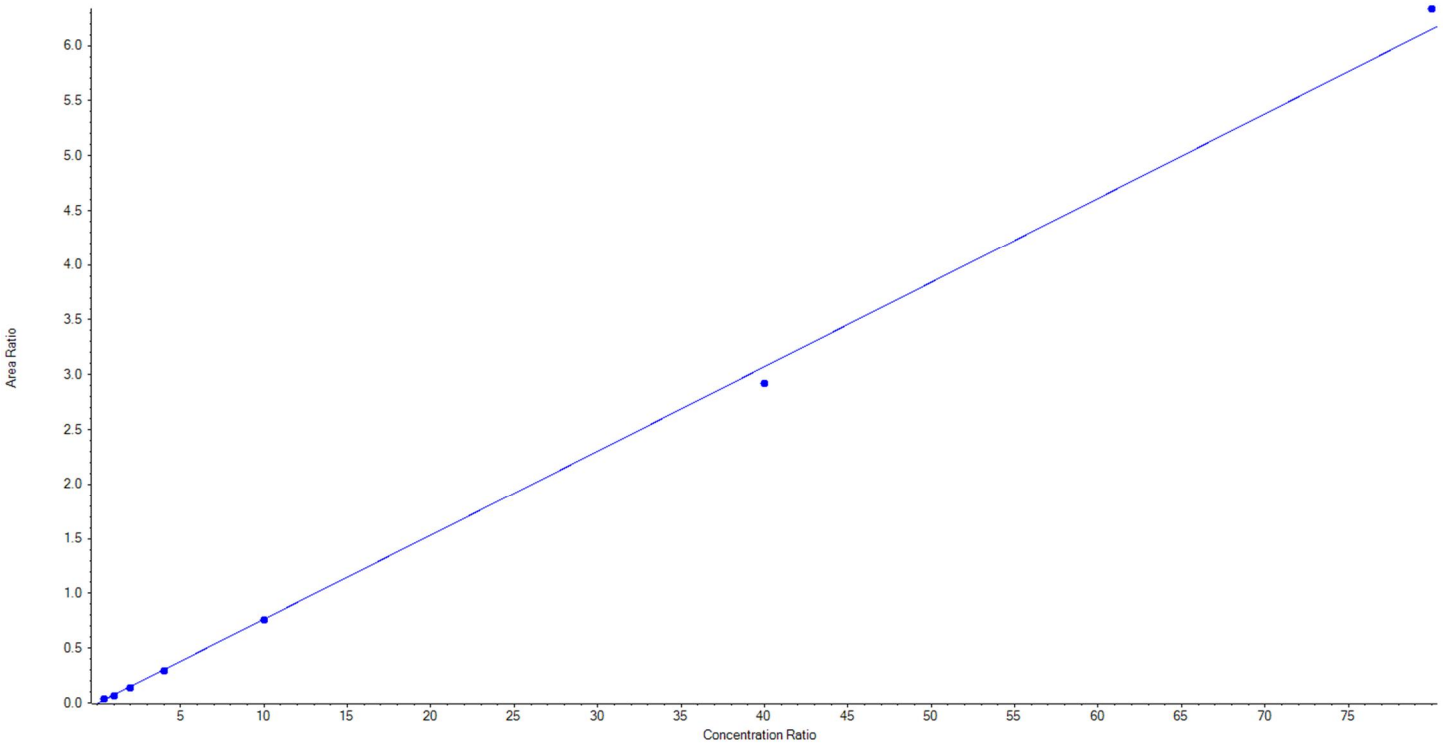
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFOA_2 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 413.0 / 169.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C8-PFOA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.07693 x + -0.00494 (r = 0.99912) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 100.00 | 122.370347 | 122.4 |
| 17 | JY39 | L2 | True | 250.00 | 235.359733 | 94.1 |
| 18 | JY40 | L3 | True | 500.00 | 453.174945 | 90.6 |
| 19 | JY41 | L4 | True | 1000.00 | 954.512338 | 95.5 |
| 20 | JY42 | L5 | True | 2500.00 | 2485.031465 | 99.4 |
| 21 | JY43 | L6 | True | 10000.00 | 9500.104415 | 95.0 |
| 22 | JY44 | L7 | True | 20000.00 | 20599.446756 | 103.0 |



BATTELLE

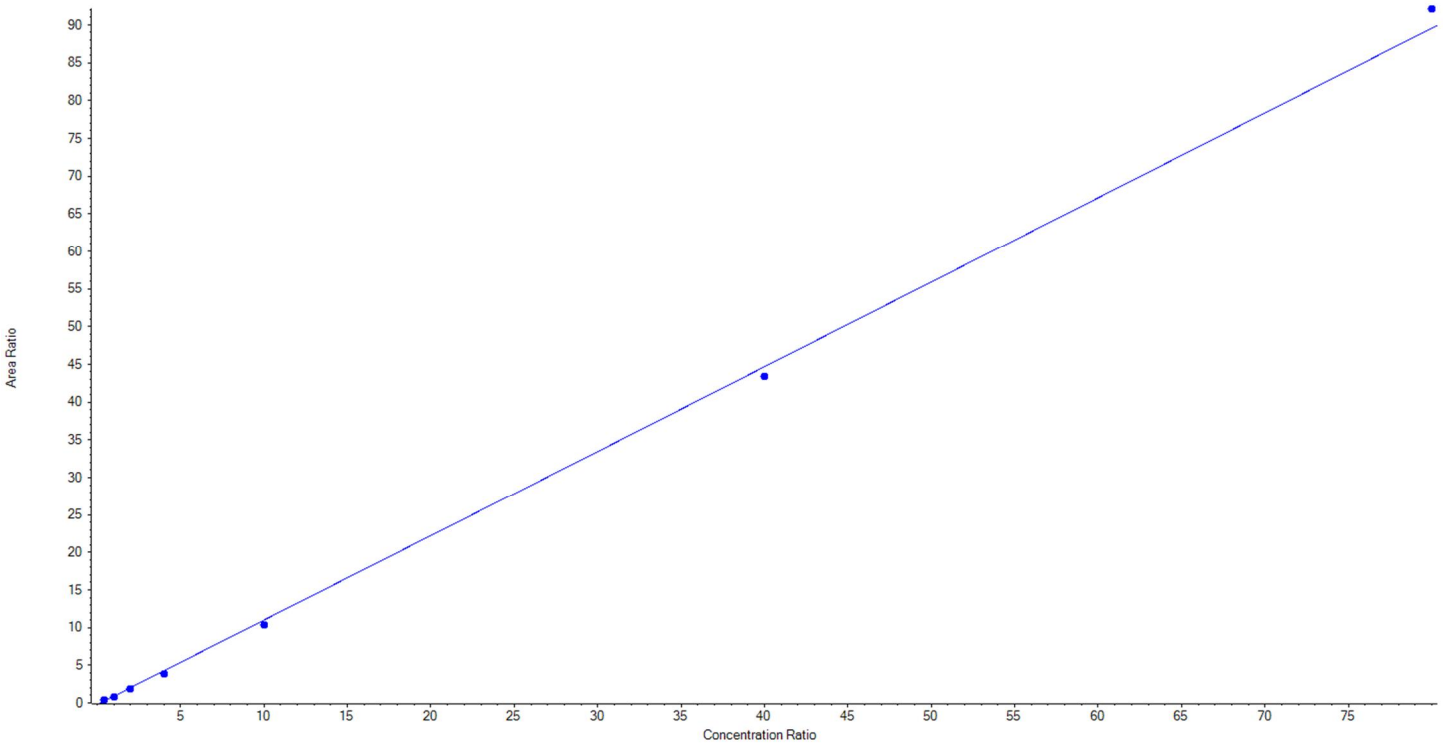
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFNA_1 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 463.0 / 419.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C9-PFNA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.12264 x + -0.22701 (r = 0.99915) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 100.00 | 127.095747 | 127.1 |
| 17 | JY39 | L2 | True | 250.00 | 242.088156 | 96.8 |
| 18 | JY40 | L3 | True | 500.00 | 457.523481 | 91.5 |
| 19 | JY41 | L4 | True | 1000.00 | 907.339887 | 90.7 |
| 20 | JY42 | L5 | True | 2500.00 | 2349.574991 | 94.0 |
| 21 | JY43 | L6 | True | 10000.00 | 9703.083553 | 97.0 |
| 22 | JY44 | L7 | True | 20000.00 | 20563.294185 | 102.8 |



BATTELLE

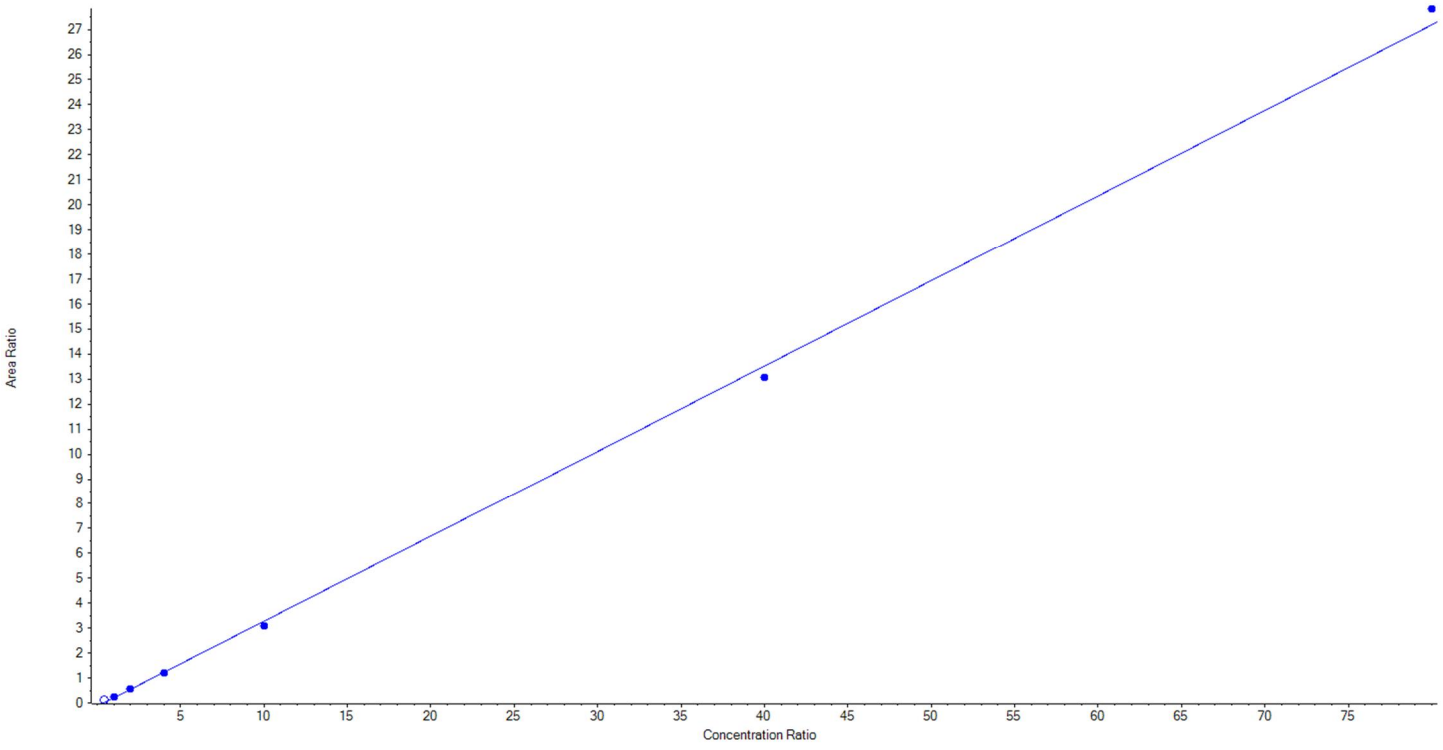
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFNA_2 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 463.0 / 219.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C9-PFNA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.34158 x + -0.13919 (r = 0.99946) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | False | 100.00 | 182.660313 | 182.7 |
| 17 | JY39 | L2 | True | 250.00 | 271.700105 | 108.7 |
| 18 | JY40 | L3 | True | 500.00 | 501.320099 | 100.3 |
| 19 | JY41 | L4 | True | 1000.00 | 974.387409 | 97.4 |
| 20 | JY42 | L5 | True | 2500.00 | 2364.139055 | 94.6 |
| 21 | JY43 | L6 | True | 10000.00 | 9671.873659 | 96.7 |
| 22 | JY44 | L7 | True | 20000.00 | 20466.579673 | 102.3 |



BATTELLE

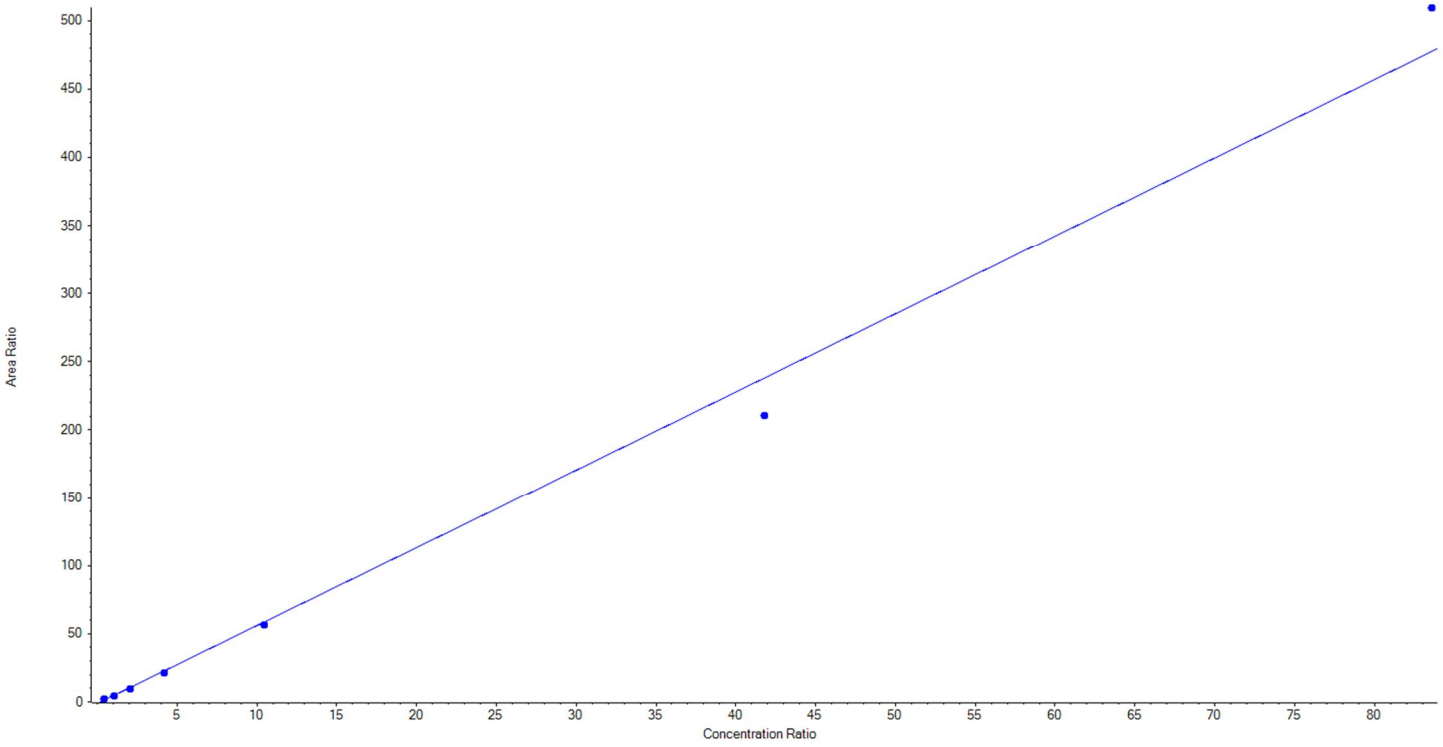
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFOS_1 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 499.0 / 80.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C8-PFOS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 5.72547 x + -1.25038 (r = 0.99619) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 100.00 | 128.920274 | 128.9 |
| 17 | JY39 | L2 | True | 250.00 | 235.031735 | 94.0 |
| 18 | JY40 | L3 | True | 500.00 | 457.419001 | 91.5 |
| 19 | JY41 | L4 | True | 1000.00 | 938.240867 | 93.8 |
| 20 | JY42 | L5 | True | 2500.00 | 2416.896980 | 96.7 |
| 21 | JY43 | L6 | True | 10000.00 | 8843.162110 | 88.4 |
| 22 | JY44 | L7 | True | 20000.00 | 21330.329034 | 106.7 |



BATTELLE

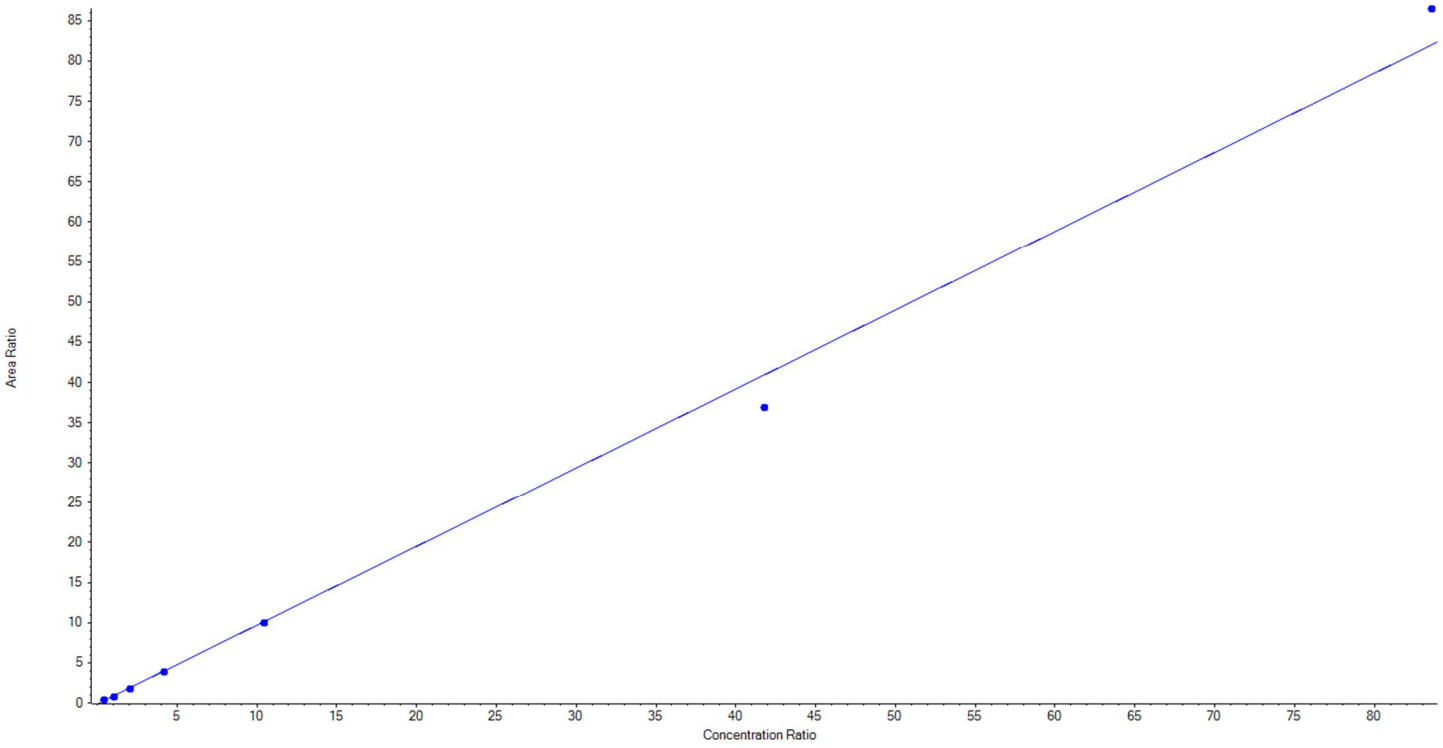
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFOS_2 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 499.0 / 99.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C8-PFOS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.98272 x + -0.14044 (r = 0.99726) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 100.00 | 128.697842 | 128.7 |
| 17 | JY39 | L2 | True | 250.00 | 212.082162 | 84.8 |
| 18 | JY40 | L3 | True | 500.00 | 469.669636 | 93.9 |
| 19 | JY41 | L4 | True | 1000.00 | 985.018915 | 98.5 |
| 20 | JY42 | L5 | True | 2500.00 | 2463.595659 | 98.5 |
| 21 | JY43 | L6 | True | 10000.00 | 9006.993858 | 90.1 |
| 22 | JY44 | L7 | True | 20000.00 | 21083.941928 | 105.4 |



BATTELLE

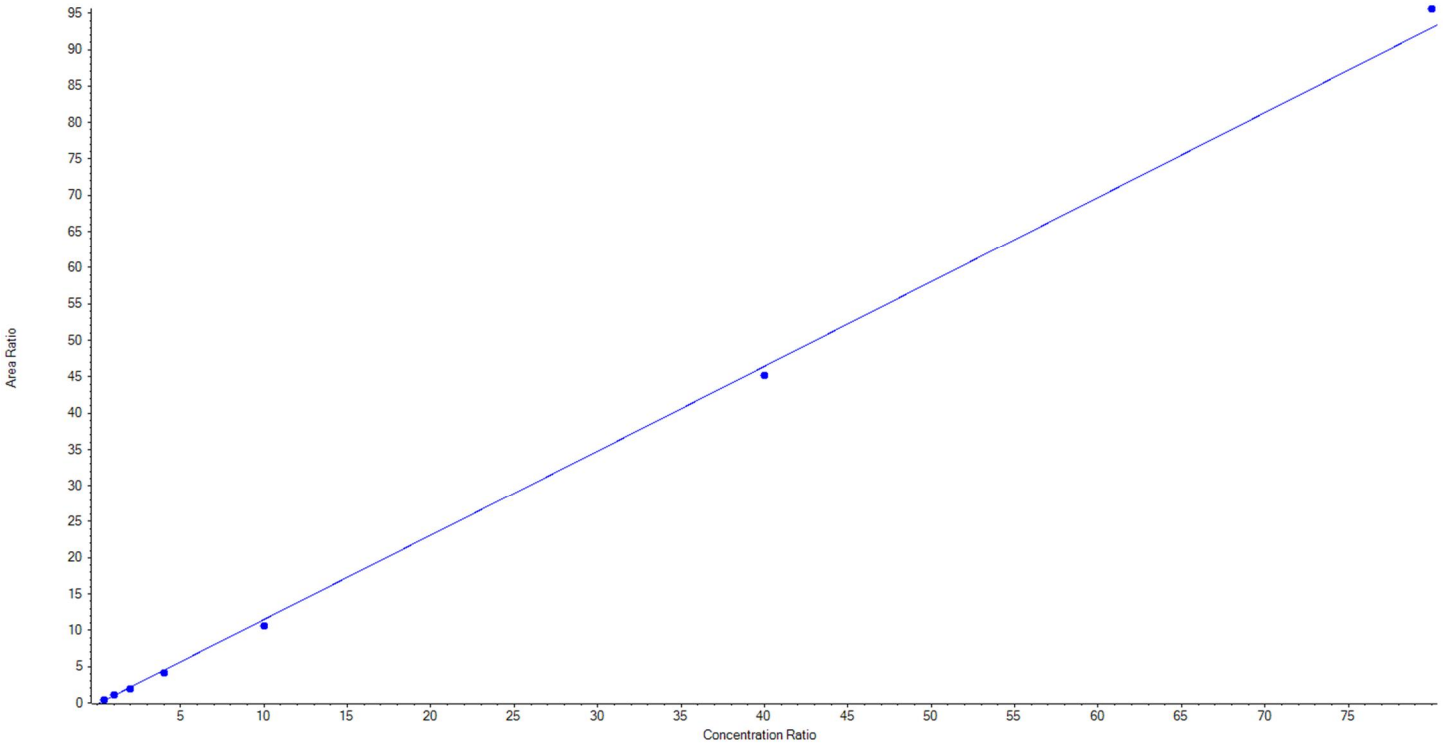
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFDA_1 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 513.0 / 469.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C6-PFDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.16463 x + -0.16116 (r = 0.99919) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 100.00 | 121.392810 | 121.4 |
| 17 | JY39 | L2 | True | 250.00 | 257.200209 | 102.9 |
| 18 | JY40 | L3 | True | 500.00 | 453.274700 | 90.7 |
| 19 | JY41 | L4 | True | 1000.00 | 923.260952 | 92.3 |
| 20 | JY42 | L5 | True | 2500.00 | 2318.858099 | 92.8 |
| 21 | JY43 | L6 | True | 10000.00 | 9722.336100 | 97.2 |
| 22 | JY44 | L7 | True | 20000.00 | 20553.677130 | 102.8 |



BATTELLE

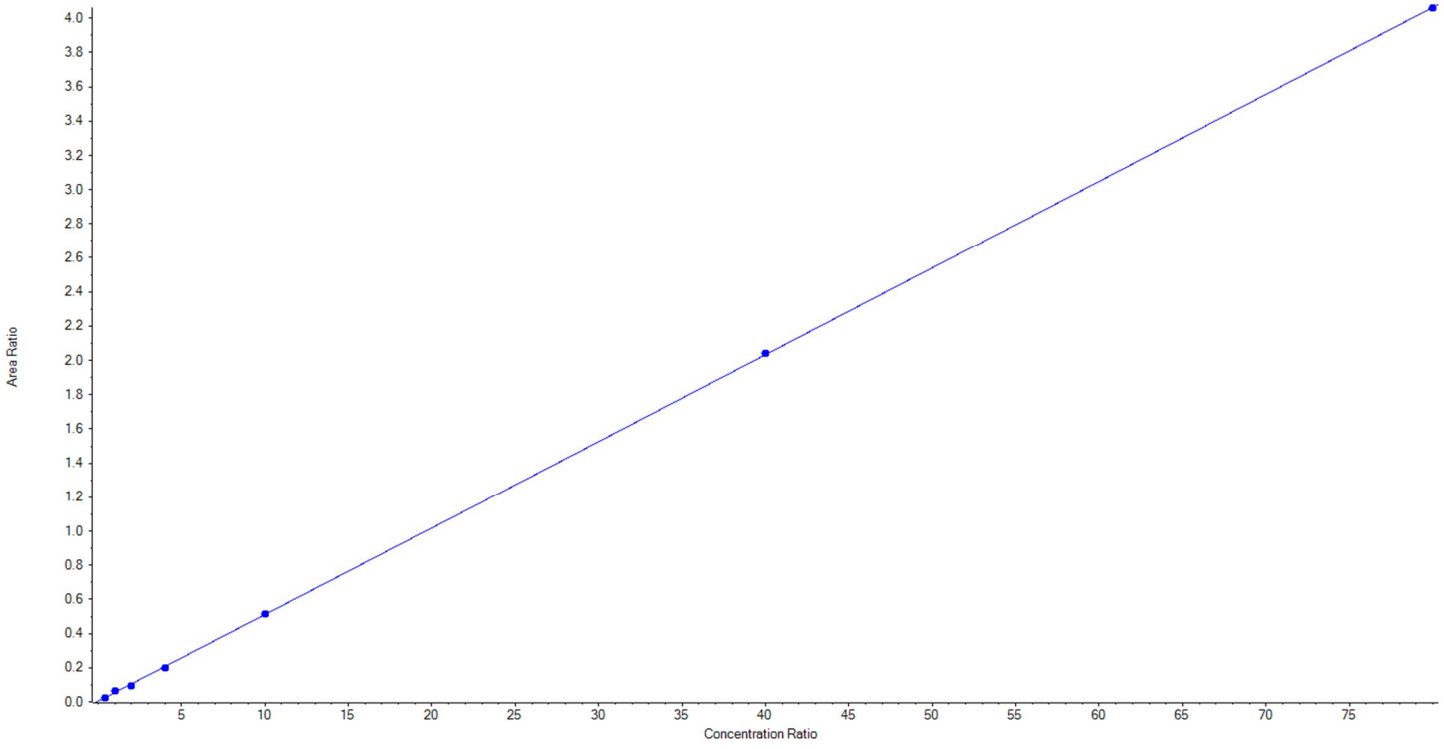
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFDA_2 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 513.0 / 219.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C6-PFDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.05073 x + 0.00420 (r = 0.99974) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 100.00 | 94.190347 | 94.2 |
| 17 | JY39 | L2 | True | 250.00 | 296.354444 | 118.5 |
| 18 | JY40 | L3 | True | 500.00 | 444.891179 | 89.0 |
| 19 | JY41 | L4 | True | 1000.00 | 970.218567 | 97.0 |
| 20 | JY42 | L5 | True | 2500.00 | 2524.611014 | 101.0 |
| 21 | JY43 | L6 | True | 10000.00 | 10036.934036 | 100.4 |
| 22 | JY44 | L7 | True | 20000.00 | 19982.800414 | 99.9 |



BATTELLE

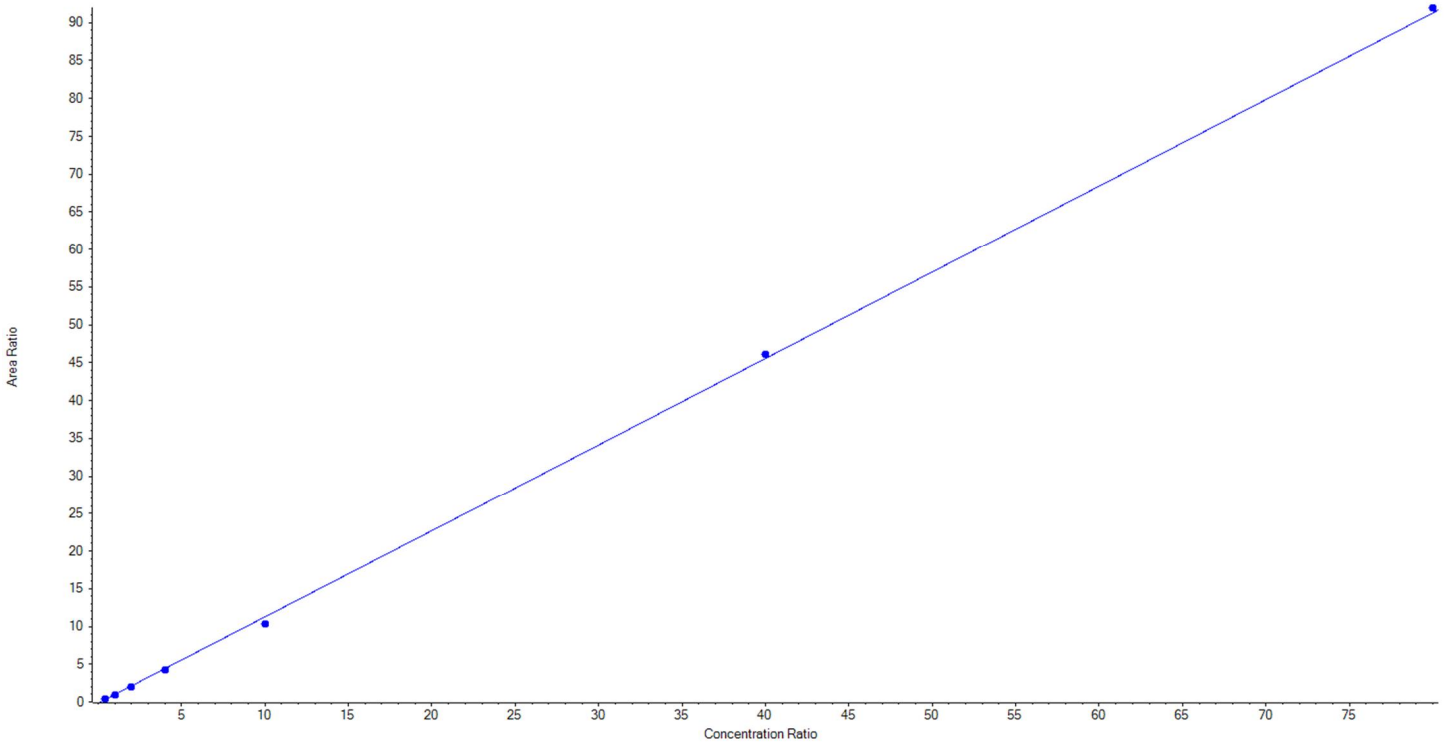
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFUnA_1 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 563.0 / 519.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C7-PFUnA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.14304 x + -0.15953 (r = 0.99960) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 100.00 | 119.016261 | 119.0 |
| 17 | JY39 | L2 | True | 250.00 | 241.564481 | 96.6 |
| 18 | JY40 | L3 | True | 500.00 | 467.741523 | 93.6 |
| 19 | JY41 | L4 | True | 1000.00 | 970.107575 | 97.0 |
| 20 | JY42 | L5 | True | 2500.00 | 2300.335601 | 92.0 |
| 21 | JY43 | L6 | True | 10000.00 | 10105.857543 | 101.1 |
| 22 | JY44 | L7 | True | 20000.00 | 20145.377016 | 100.7 |



BATTELLE

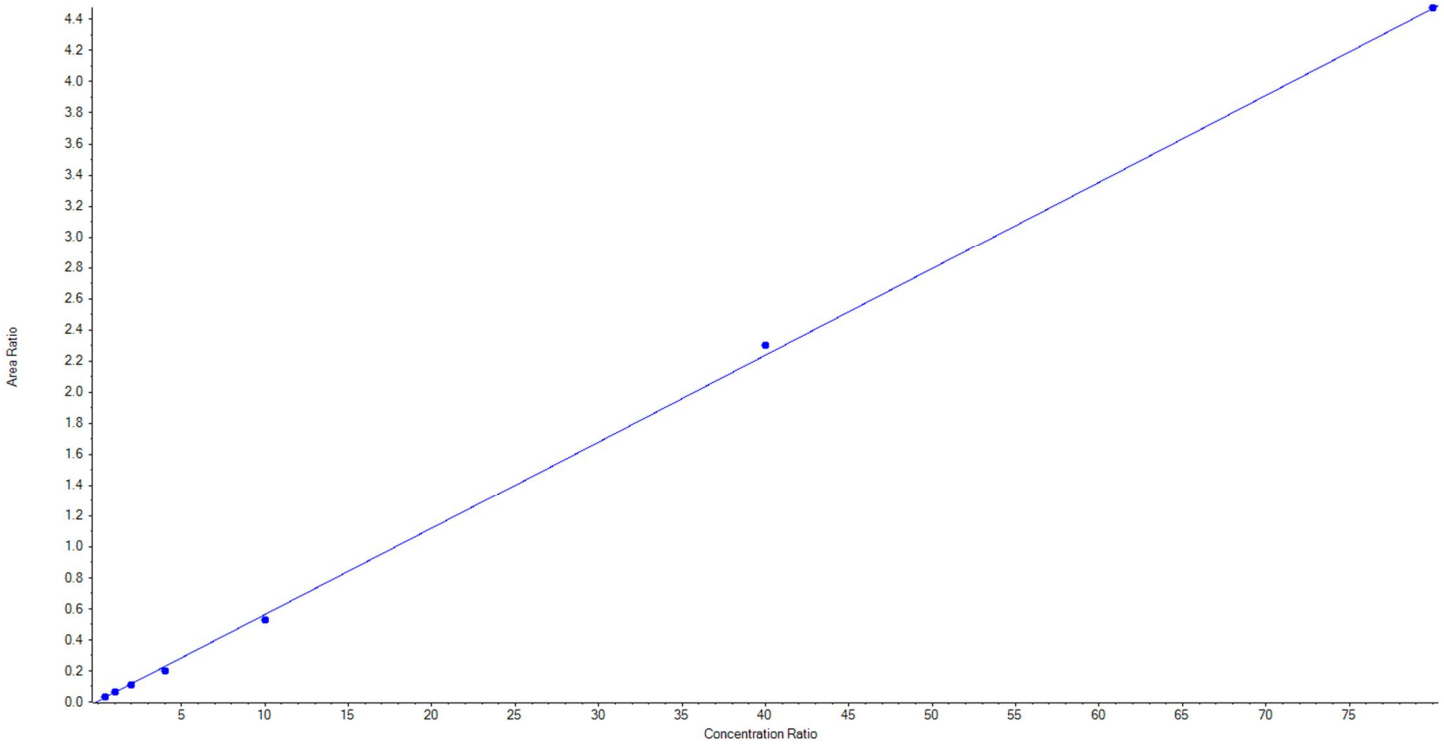
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFUnA_2 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 563.0 / 269.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C7-PFUnA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.05580 x + 0.00547 (r = 0.99929) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 100.00 | 113.798412 | 113.8 |
| 17 | JY39 | L2 | True | 250.00 | 276.385634 | 110.6 |
| 18 | JY40 | L3 | True | 500.00 | 465.429835 | 93.1 |
| 19 | JY41 | L4 | True | 1000.00 | 862.672395 | 86.3 |
| 20 | JY42 | L5 | True | 2500.00 | 2335.268906 | 93.4 |
| 21 | JY43 | L6 | True | 10000.00 | 10280.229409 | 102.8 |
| 22 | JY44 | L7 | True | 20000.00 | 20016.215408 | 100.1 |



BATTELLE

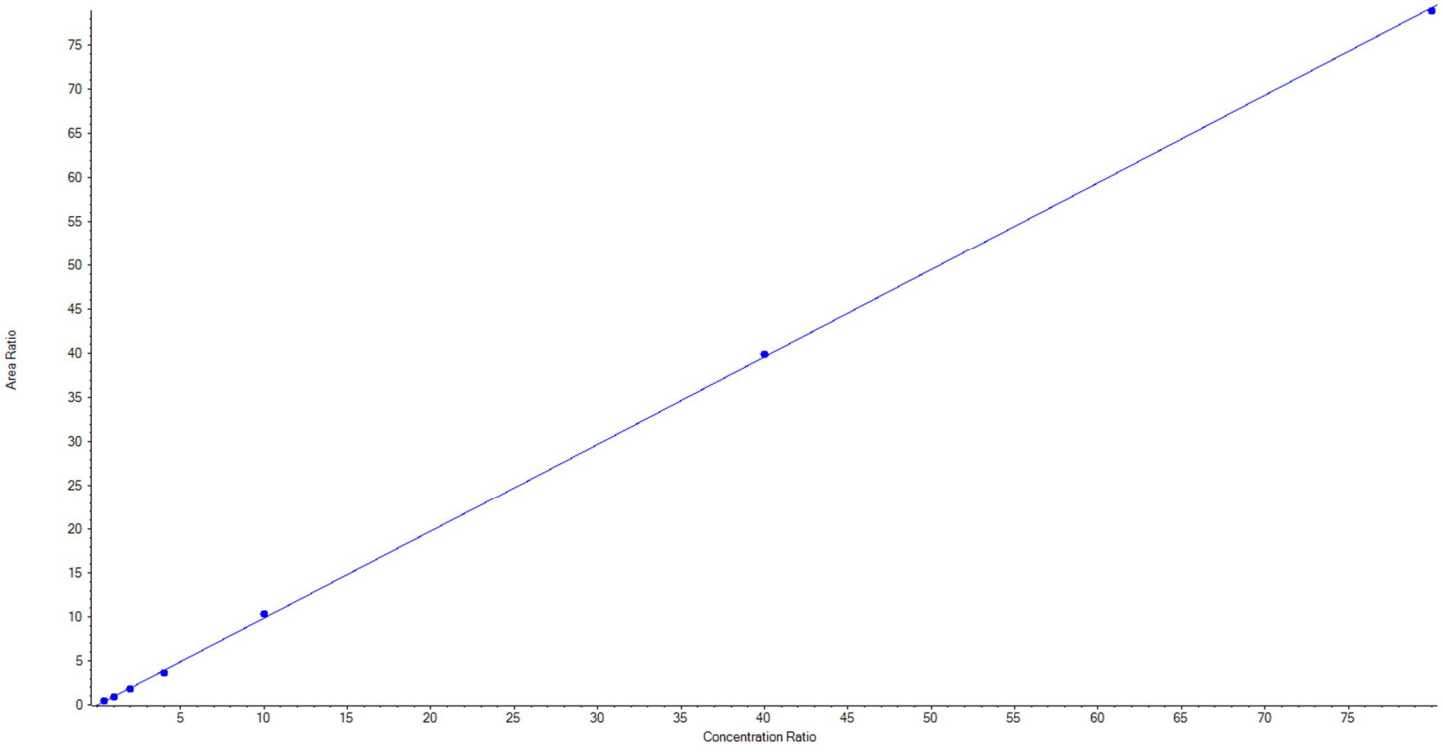
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFDoA_1 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 613.0 / 569.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C2-PFDoA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.99139 x + -0.04305 (r = 0.99975) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 100.00 | 112.133275 | 112.1 |
| 17 | JY39 | L2 | True | 250.00 | 241.700657 | 96.7 |
| 18 | JY40 | L3 | True | 500.00 | 459.119430 | 91.8 |
| 19 | JY41 | L4 | True | 1000.00 | 942.059622 | 94.2 |
| 20 | JY42 | L5 | True | 2500.00 | 2624.559975 | 105.0 |
| 21 | JY43 | L6 | True | 10000.00 | 10064.415944 | 100.6 |
| 22 | JY44 | L7 | True | 20000.00 | 19906.011098 | 99.5 |



BATTELLE

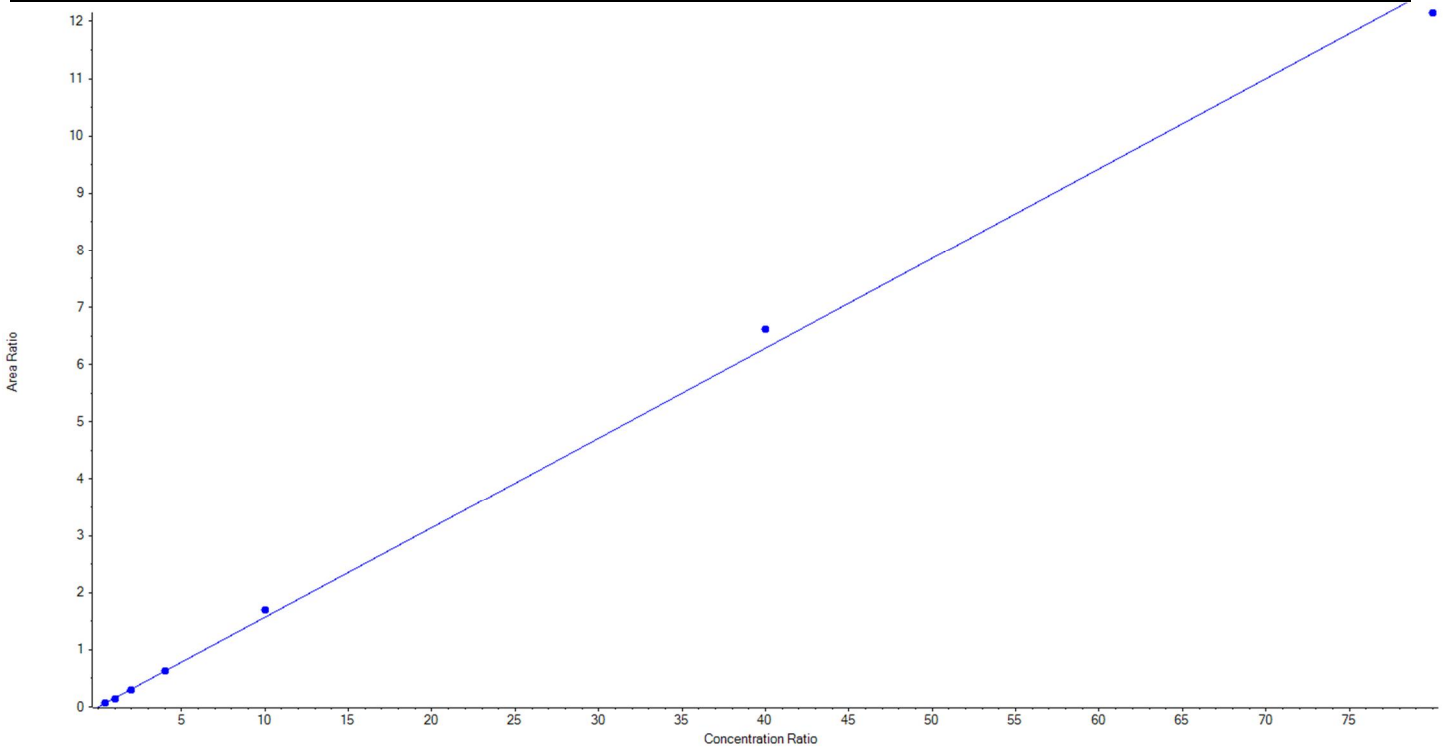
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFDoA_2 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 613.0 / 319.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C2-PFDoA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.15717 x + -0.00138 (r = 0.99889) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 100.00 | 105.358138 | 105.4 |
| 17 | JY39 | L2 | True | 250.00 | 217.554942 | 87.0 |
| 18 | JY40 | L3 | True | 500.00 | 488.393595 | 97.7 |
| 19 | JY41 | L4 | True | 1000.00 | 1001.753233 | 100.2 |
| 20 | JY42 | L5 | True | 2500.00 | 2700.462708 | 108.0 |
| 21 | JY43 | L6 | True | 10000.00 | 10512.989394 | 105.1 |
| 22 | JY44 | L7 | True | 20000.00 | 19323.487988 | 96.6 |



BATTELLE

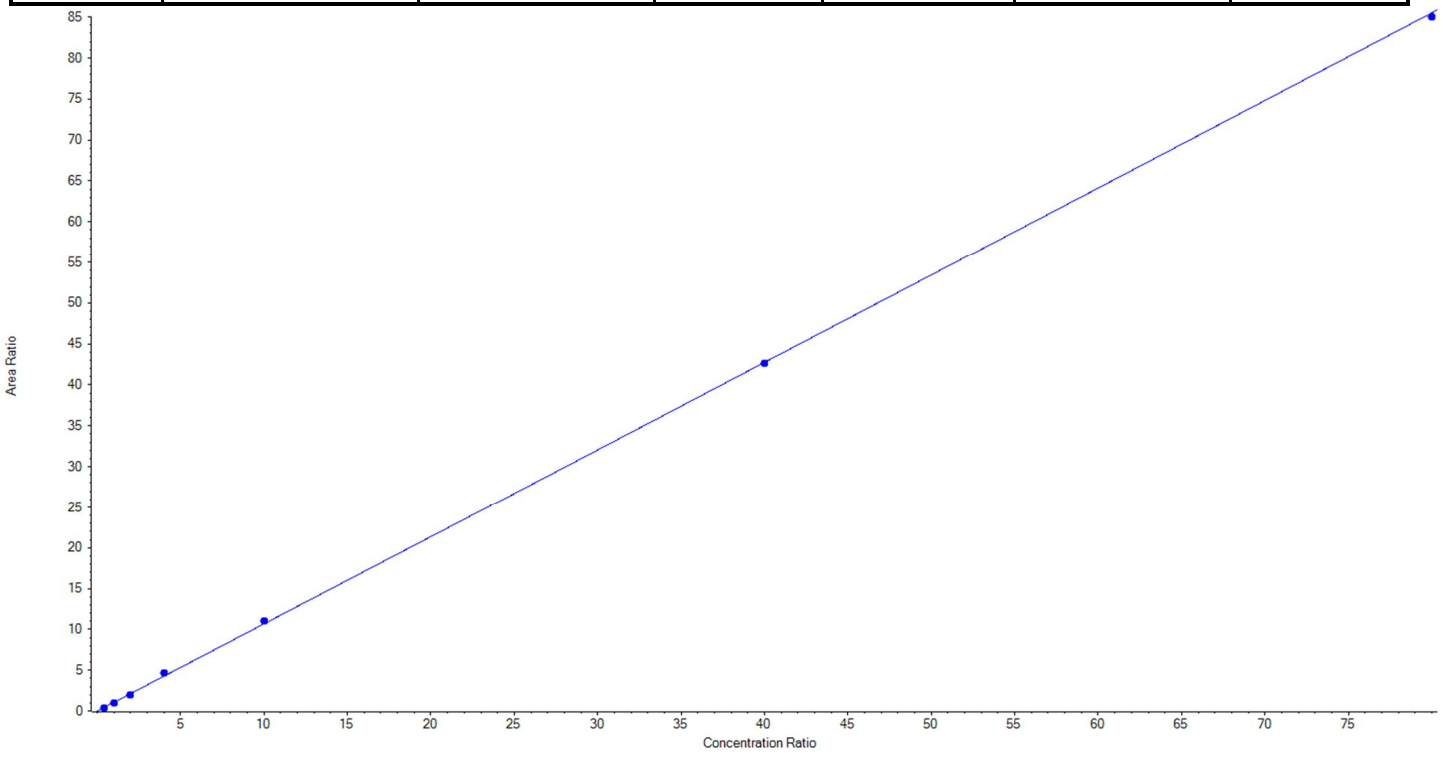
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFTrDA_1 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 663.0 / 619.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C2-PFTeDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.06914 x + -0.02151 (r = 0.99980) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 100.00 | 97.925055 | 97.9 |
| 17 | JY39 | L2 | True | 250.00 | 242.562278 | 97.0 |
| 18 | JY40 | L3 | True | 500.00 | 470.354028 | 94.1 |
| 19 | JY41 | L4 | True | 1000.00 | 1080.349090 | 108.0 |
| 20 | JY42 | L5 | True | 2500.00 | 2592.613859 | 103.7 |
| 21 | JY43 | L6 | True | 10000.00 | 9981.757307 | 99.8 |
| 22 | JY44 | L7 | True | 20000.00 | 19884.438383 | 99.4 |



BATTELLE

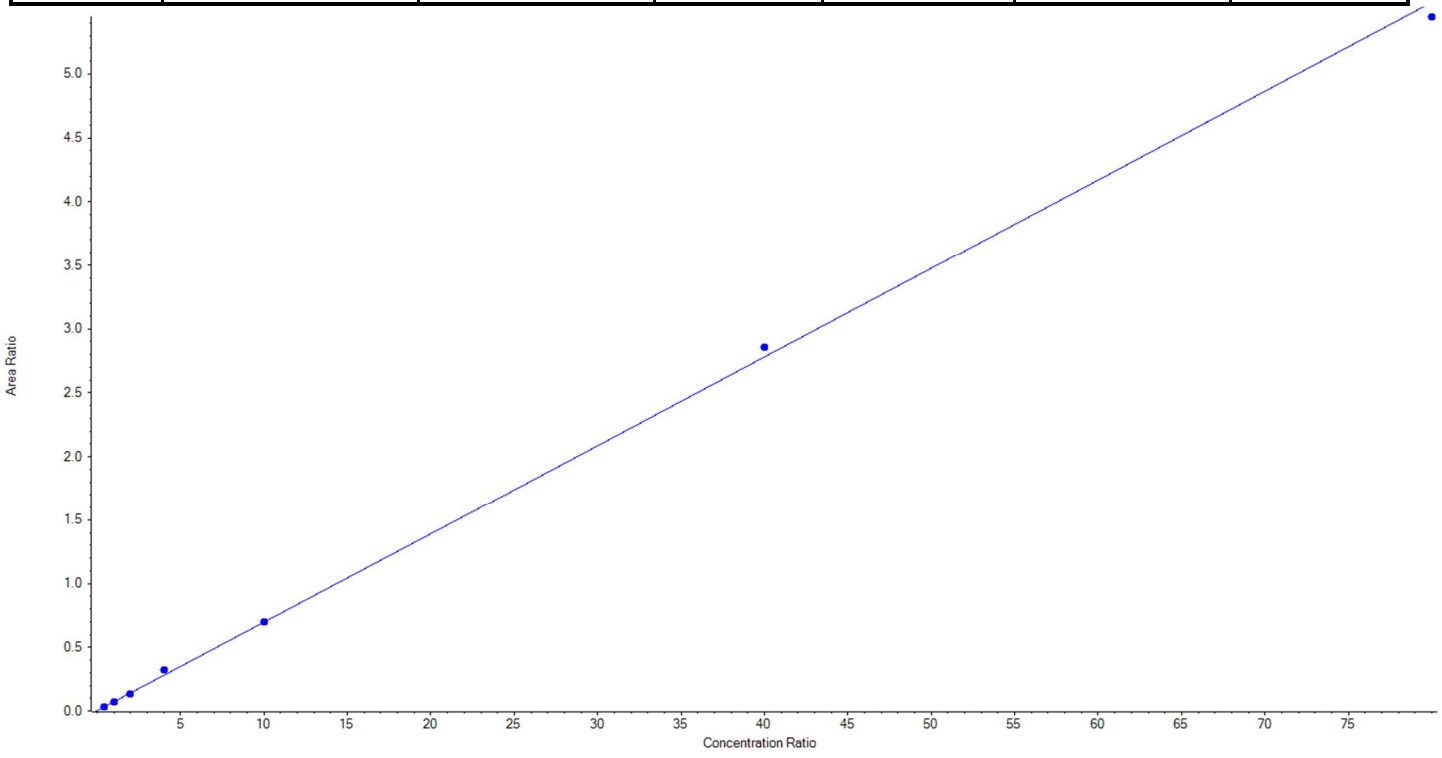
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFTrDA_2 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 663.0 / 169.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C2-PFTeDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.06946 x + 0.00211 (r = 0.99934) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 100.00 | 94.524748 | 94.5 |
| 17 | JY39 | L2 | True | 250.00 | 232.598312 | 93.0 |
| 18 | JY40 | L3 | True | 500.00 | 479.459843 | 95.9 |
| 19 | JY41 | L4 | True | 1000.00 | 1150.265021 | 115.0 |
| 20 | JY42 | L5 | True | 2500.00 | 2518.035578 | 100.7 |
| 21 | JY43 | L6 | True | 10000.00 | 10284.090238 | 102.8 |
| 22 | JY44 | L7 | True | 20000.00 | 19591.026260 | 98.0 |



BATTELLE

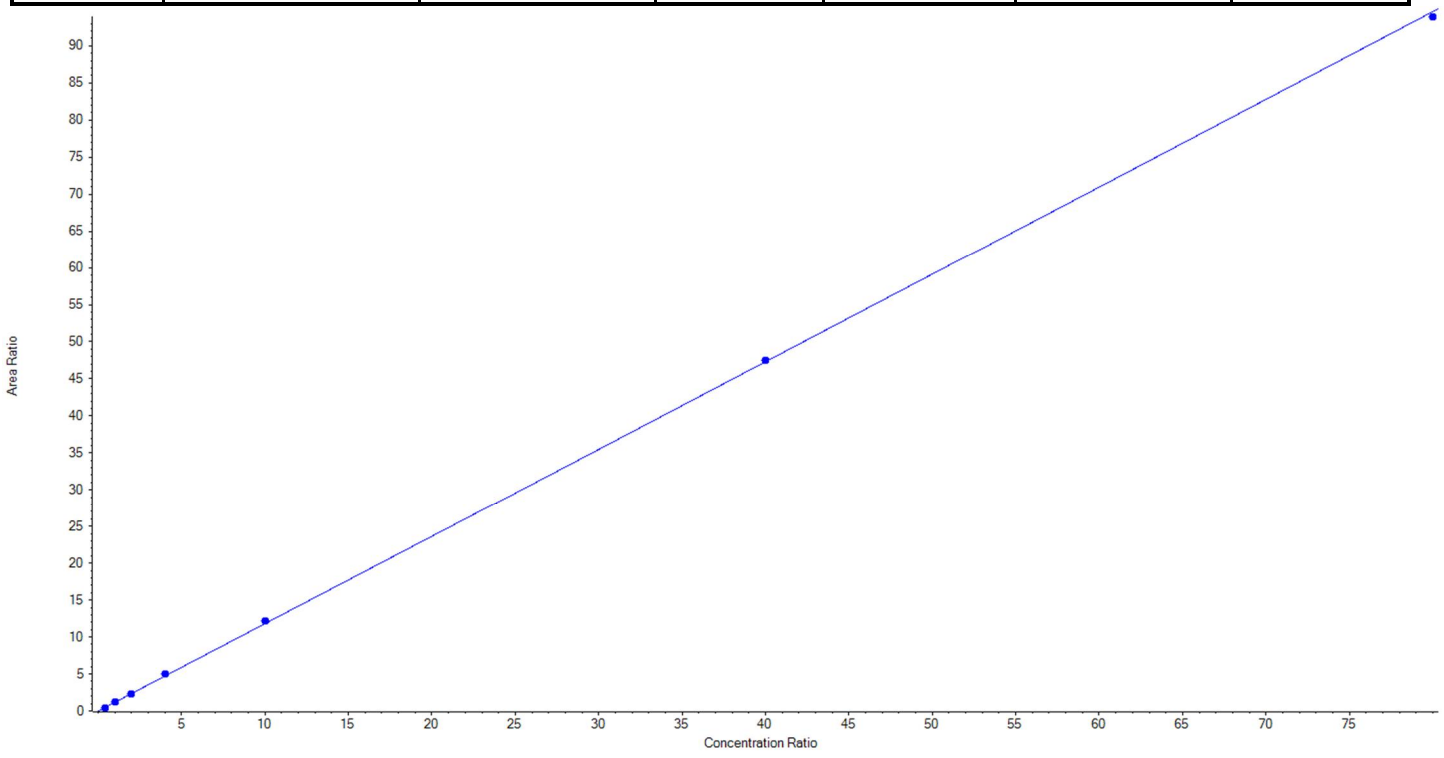
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFTeDA_1 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 713.0 / 669.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C2-PFTeDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.18280 x + -0.01271 (r = 0.99988) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 100.00 | 97.781779 | 97.8 |
| 17 | JY39 | L2 | True | 250.00 | 247.418581 | 99.0 |
| 18 | JY40 | L3 | True | 500.00 | 477.243455 | 95.5 |
| 19 | JY41 | L4 | True | 1000.00 | 1050.613295 | 105.1 |
| 20 | JY42 | L5 | True | 2500.00 | 2574.027828 | 103.0 |
| 21 | JY43 | L6 | True | 10000.00 | 10053.015953 | 100.5 |
| 22 | JY44 | L7 | True | 20000.00 | 19849.899110 | 99.3 |



BATTELLE

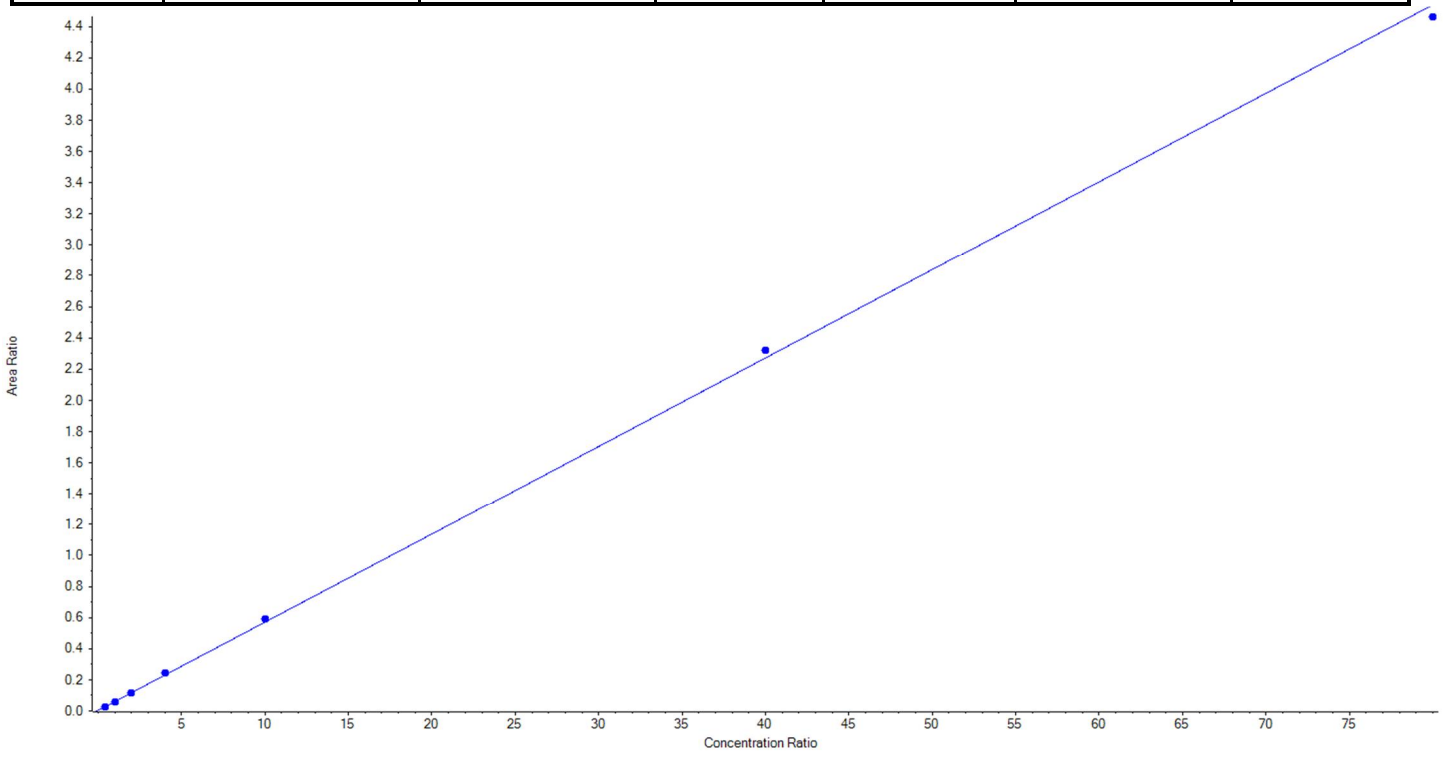
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFTeDA_2 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 713.0 / 169.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C2-PFTeDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.05669 x + 0.00398 (r = 0.99969) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 100.00 | 94.772432 | 94.8 |
| 17 | JY39 | L2 | True | 250.00 | 245.531266 | 98.2 |
| 18 | JY40 | L3 | True | 500.00 | 480.829524 | 96.2 |
| 19 | JY41 | L4 | True | 1000.00 | 1071.559211 | 107.2 |
| 20 | JY42 | L5 | True | 2500.00 | 2580.328361 | 103.2 |
| 21 | JY43 | L6 | True | 10000.00 | 10219.041173 | 102.2 |
| 22 | JY44 | L7 | True | 20000.00 | 19657.938034 | 98.3 |



BATTELLE

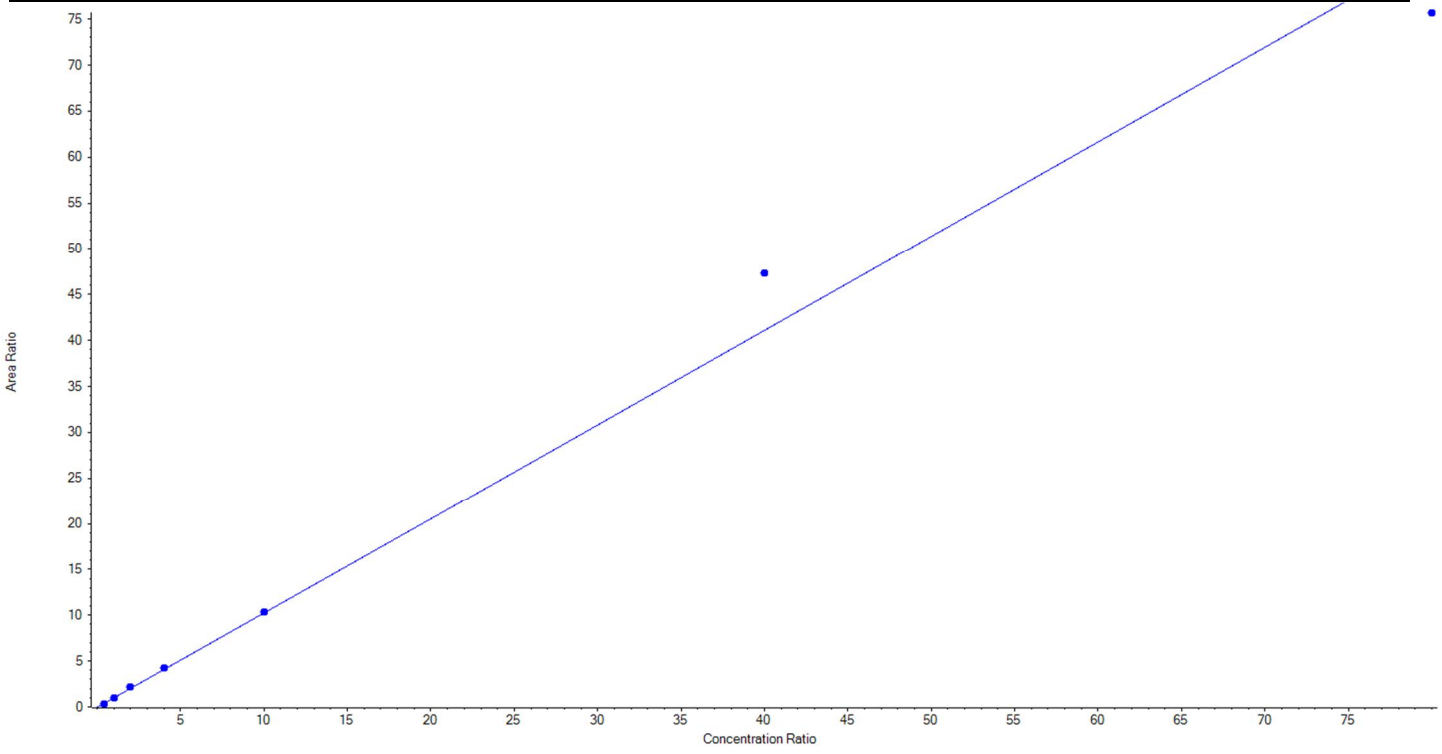
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | NMeFOSAA_1 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 570.0 / 419.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | d3-MeFOSAA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.02819 x + -0.03840 (r = 0.99425) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 100.00 | 82.782049 | 82.8 |
| 17 | JY39 | L2 | True | 250.00 | 235.752361 | 94.3 |
| 18 | JY40 | L3 | True | 500.00 | 551.603355 | 110.3 |
| 19 | JY41 | L4 | True | 1000.00 | 1048.742817 | 104.9 |
| 20 | JY42 | L5 | True | 2500.00 | 2514.949799 | 100.6 |
| 21 | JY43 | L6 | True | 10000.00 | 11508.642791 | 115.1 |
| 22 | JY44 | L7 | True | 20000.00 | 18407.526829 | 92.0 |



BATTELLE

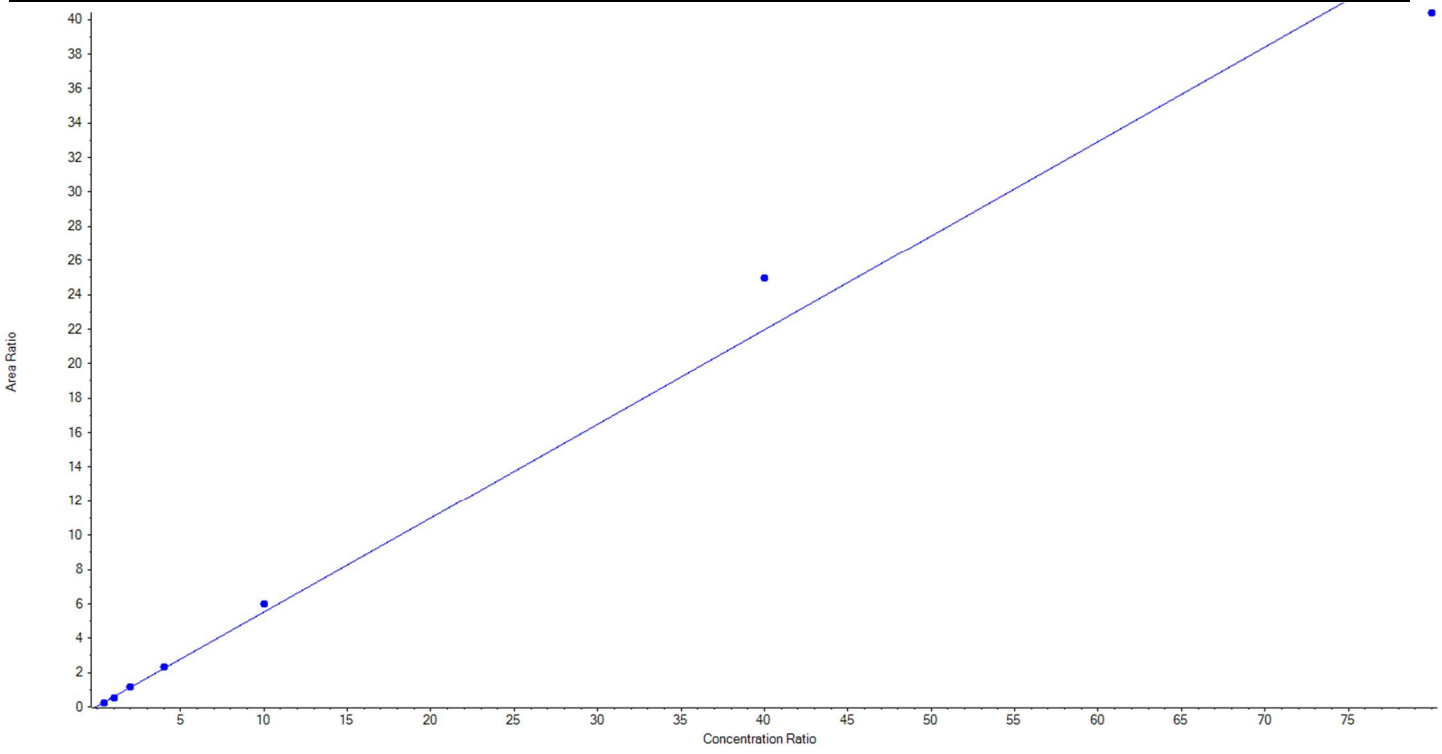
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | NMeFOSAA_2 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 570.0 / 512.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | d3-MeFOSAA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.54797 x + 0.04389 (r = 0.99469) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | True | 100.00 | 88.329106 | 88.3 |
| 17 | JY39 | L2 | True | 250.00 | 228.950311 | 91.6 |
| 18 | JY40 | L3 | True | 500.00 | 508.283885 | 101.7 |
| 19 | JY41 | L4 | True | 1000.00 | 1045.973992 | 104.6 |
| 20 | JY42 | L5 | True | 2500.00 | 2702.270084 | 108.1 |
| 21 | JY43 | L6 | True | 10000.00 | 11372.965311 | 113.7 |
| 22 | JY44 | L7 | True | 20000.00 | 18403.227310 | 92.0 |



BATTELLE

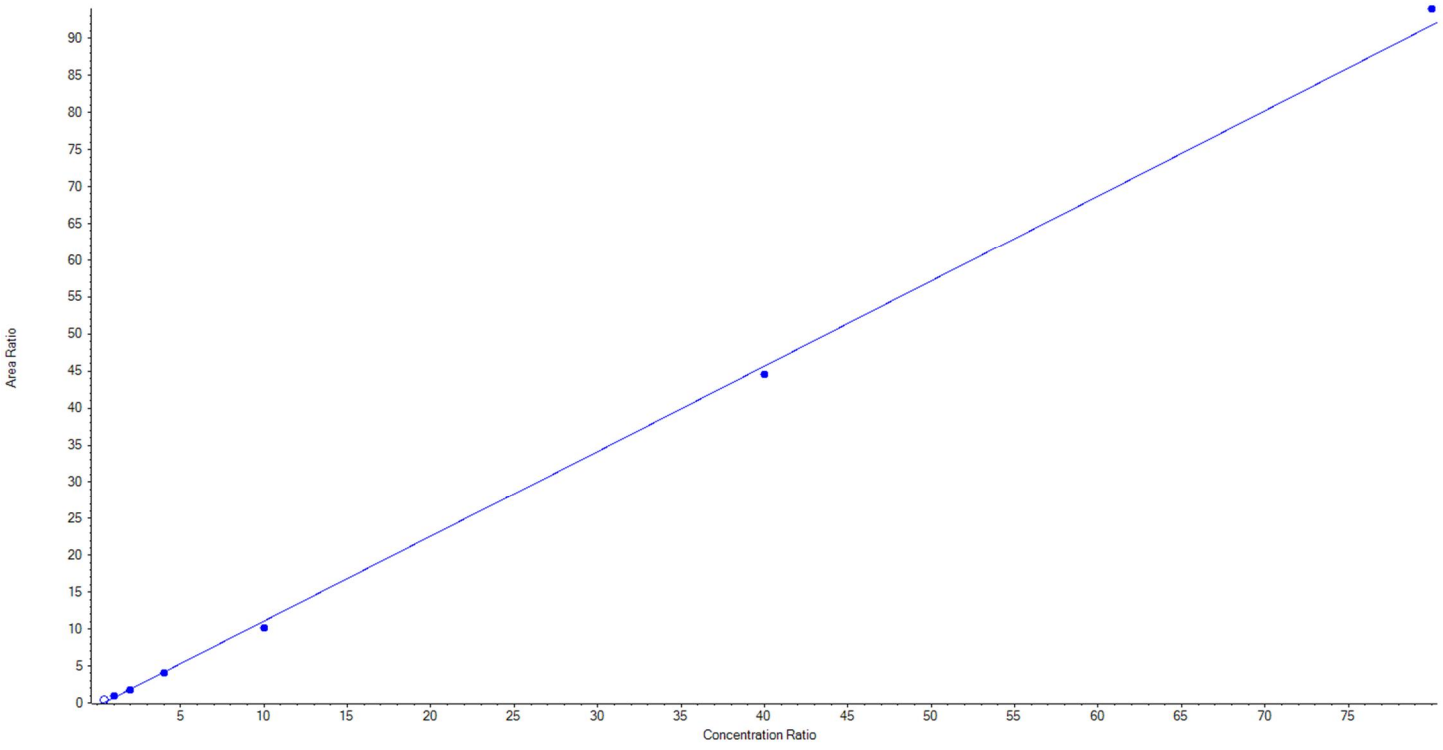
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | NEtFOSAA_1 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 584.0 / 419.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | d5-EtFOSAA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.15271 x + -0.44500 (r = 0.99924) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | False | 100.00 | 183.838274 | 183.8 |
| 17 | JY39 | L2 | True | 250.00 | 291.768822 | 116.7 |
| 18 | JY40 | L3 | True | 500.00 | 475.784135 | 95.2 |
| 19 | JY41 | L4 | True | 1000.00 | 967.249045 | 96.7 |
| 20 | JY42 | L5 | True | 2500.00 | 2288.284973 | 91.5 |
| 21 | JY43 | L6 | True | 10000.00 | 9748.955119 | 97.5 |
| 22 | JY44 | L7 | True | 20000.00 | 20477.957906 | 102.4 |



BATTELLE

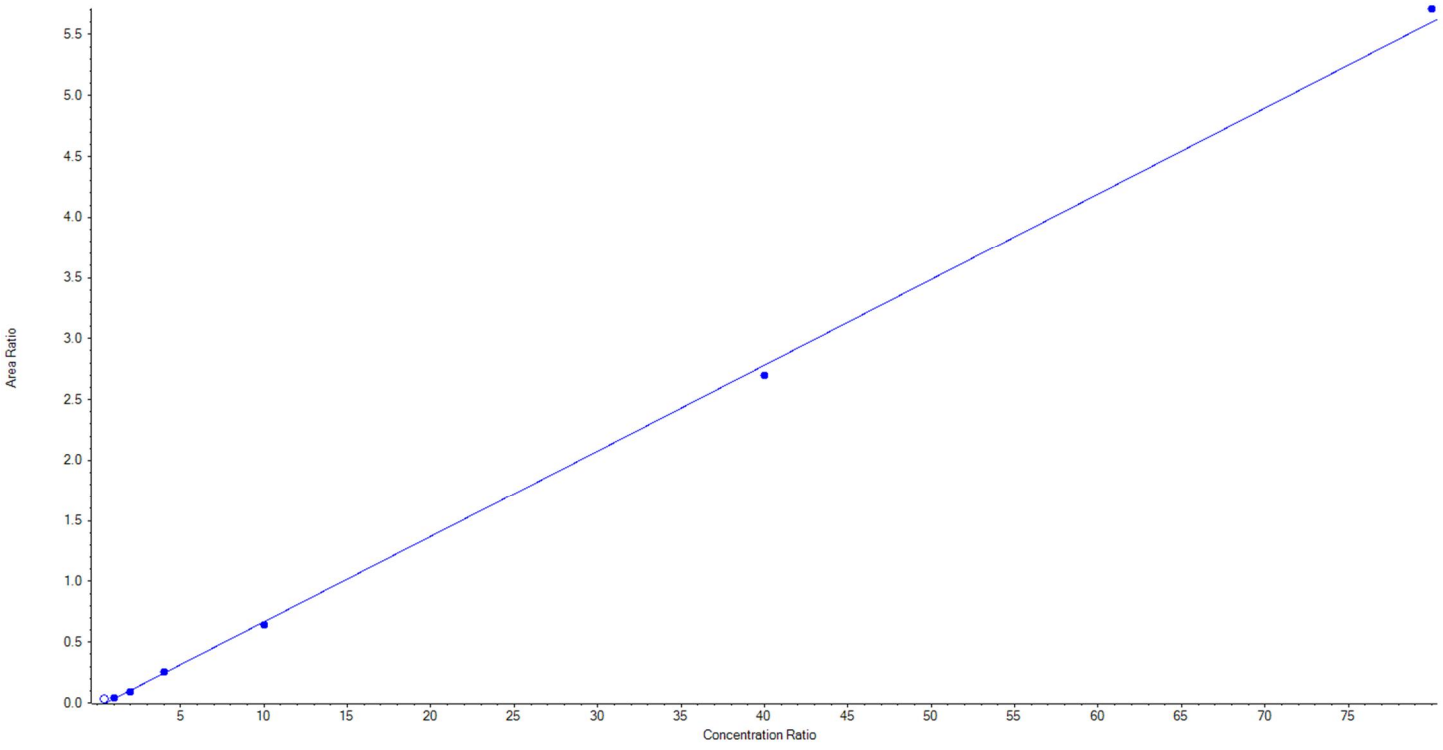
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | NEtFOSAA_2 | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 584.0 / 483.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | d5-EtFOSAA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.07048 x + -0.03780 (r = 0.99947) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | False | 100.00 | 257.659715 | 257.7 |
| 17 | JY39 | L2 | True | 250.00 | 283.436437 | 113.4 |
| 18 | JY40 | L3 | True | 500.00 | 441.128614 | 88.2 |
| 19 | JY41 | L4 | True | 1000.00 | 1029.079847 | 102.9 |
| 20 | JY42 | L5 | True | 2500.00 | 2414.680611 | 96.6 |
| 21 | JY43 | L6 | True | 10000.00 | 9699.224188 | 97.0 |
| 22 | JY44 | L7 | True | 20000.00 | 20382.450304 | 101.9 |



BATTELLE

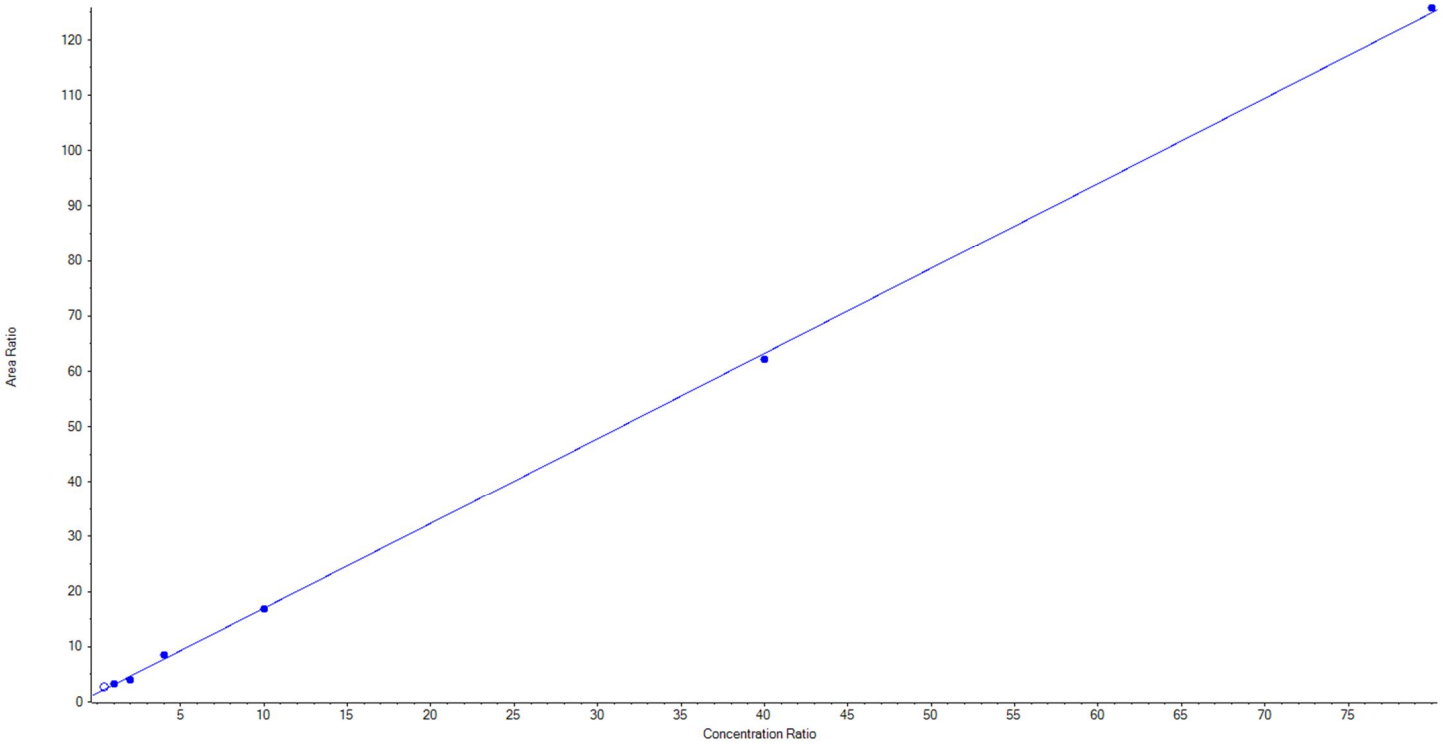
Calibration Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:08:31 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFBA | **Data File** | 18-0511_18-0517.wiff |
| **MRM Transition** | 213.0 / 169.0 | **Result Table** | 18-0500_BASE_R |
| **Internal Standard** | 13C4-PFBA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/28/2018 7:53:59 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.54145 x + 1.57832 (r = 0.99925) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 16 | JY38 | L1 | False | 100.00 | 199.494040 | 199.5 |
| 17 | JY39 | L2 | True | 250.00 | 269.760043 | 107.9 |
| 18 | JY40 | L3 | True | 500.00 | 400.763360 | 80.2 |
| 19 | JY41 | L4 | True | 1000.00 | 1136.820309 | 113.7 |
| 20 | JY42 | L5 | True | 2500.00 | 2485.081441 | 99.4 |
| 21 | JY43 | L6 | True | 10000.00 | 9814.029596 | 98.1 |
| 22 | JY44 | L7 | True | 20000.00 | 20143.545251 | 100.7 |



BATTELLE

| | Isotope Dilution Calibration Curve Concentrations (ng/L) | | | | | | |
|---|---|---|---|---|---|---|---|
| | JY38 | JY39 | JY40 | JY41 | JY42 | JY43 | JY44 |
| PFBA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFPeA | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| PFHxA | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| PFHpA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFOA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFNA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFDA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFUnA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFDoA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFTrDA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFTeDA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| NMeFOSAA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| NEtFOSAA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFOSA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFBS | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| PFPeS | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFHxS (Branched) | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| PFHpS | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFOS (Branched) | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFDS | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| PFNS | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| 4:2FTS | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| 6:2FTS | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| 8:2FTS | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| | Surrogates / Extracted Internal Standards | | | | | | |
| 13C4-PFBA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C5-PFPeA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C5-PFHxA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C4-PFHpA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C8-PFOA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C9-PFNA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C6-PFDA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C7-PFUnA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C2-PFDoA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C2-PFTeDA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| d3-MeFOSAA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| d5-EtFOSAA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C8-FOSA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C3-PFBS | 232.25 | 232.25 | 232.25 | 232.25 | 232.25 | 232.25 | 232.25 |
| 13C3-PFHxS | 236.50 | 236.50 | 236.50 | 236.50 | 236.50 | 236.50 | 236.50 |
| 13C8-PFOS | 239.25 | 239.25 | 239.25 | 239.25 | 239.25 | 239.25 | 239.25 |
| 13C2-4:2FTS | 233.75 | 233.75 | 233.75 | 233.75 | 233.75 | 233.75 | 233.75 |
| 13C2-6:2FTS | 237.25 | 237.25 | 237.25 | 237.25 | 237.25 | 237.25 | 237.25 |
| 13C2-8:2FTS | 239.50 | 239.50 | 239.50 | 239.50 | 239.50 | 239.50 | 239.50 |
| | Internal Standards | | | | | | |
| 13C3-PFBA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C2-PFOA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C2-PFDA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C4-PFOS | 239.25 | 239.25 | 239.25 | 239.25 | 239.25 | 239.25 | 239.25 |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 30/08/2018 2:42:03 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY38 | **Injection Vial** | 2 |
| **Sample ID** | L1 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:36:54 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_A |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.56 | PFBS | 0.309 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.88 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.88 | PFHxA | 0.051 | 0.071 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.28 | PFHpA | 0.021 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.30 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.29 | PFHxS | 0.282 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.68 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.68 | PFOA | 0.064 | 0.066 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.07 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.07 | PFNA | 0.358 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.06 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.06 | PFOS | 0.183 | 0.174 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.42 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.42 | PFDA | 0.075 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.74 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.74 | PFUnA | 0.086 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | PFDoA | 0.157 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.27 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.27 | PFTrDA | 0.070 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.49 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.49 | PFTeDA | 0.049 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | NMeFOSAA | 0.623 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.74 | NEtFOSAA | 0.082 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.17 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 30/08/2018 2:42:16 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY39 | **Injection Vial** | 3 |
| **Sample ID** | L2 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:47:47 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_A |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.55 | PFBS | 0.289 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.87 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.87 | PFHxA | 0.072 | 0.071 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.26 | PFHpA | 0.026 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.29 | PFHxS | 0.271 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.67 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.67 | PFOA | 0.062 | 0.066 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.06 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.06 | PFNA | 0.289 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.06 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.06 | PFOS | 0.160 | 0.174 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.41 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.42 | PFDA | 0.065 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | PFUnA | 0.061 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | PFDoA | 0.171 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.26 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.26 | PFTrDA | 0.068 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.49 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | PFTeDA | 0.046 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | NMeFOSAA | 0.520 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | NEtFOSAA | 0.056 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.17 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 30/08/2018 2:42:20 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY40 | **Injection Vial** | 4 |
| **Sample ID** | L3 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:58:41 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_A |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.55 | PFBS | 0.295 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.87 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.87 | PFHxA | 0.081 | 0.071 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | PFHpA | 0.019 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.29 | PFHxS | 0.287 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.67 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.67 | PFOA | 0.069 | 0.066 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.06 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.06 | PFNA | 0.333 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.06 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.06 | PFOS | 0.174 | 0.174 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.41 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.42 | PFDA | 0.048 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | PFUnA | 0.056 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | PFDoA | 0.161 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.26 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.26 | PFTrDA | 0.060 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.48 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | PFTeDA | 0.049 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | NMeFOSAA | 0.580 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | NEtFOSAA | 0.054 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.17 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 30/08/2018 2:42:31 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY41 | **Injection Vial** | 5 |
| **Sample ID** | L4 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:09:34 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_A |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.56 | PFBS | 0.283 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.87 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.87 | PFHxA | 0.067 | 0.071 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | PFHpA | 0.019 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.29 | PFHxS | 0.283 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.67 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.67 | PFOA | 0.069 | 0.066 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.06 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.06 | PFNA | 0.313 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.06 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.06 | PFOS | 0.173 | 0.174 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.42 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.41 | PFDA | 0.042 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | PFUnA | 0.055 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | PFDoA | 0.161 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.27 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.27 | PFTrDA | 0.060 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.49 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | PFTeDA | 0.047 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | NMeFOSAA | 0.544 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | NEtFOSAA | 0.061 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.17 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 30/08/2018 2:42:41 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY42 | **Injection Vial** | 6 |
| **Sample ID** | L5 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:20:26 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_A |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.55 | PFBS | 0.292 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.87 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | PFHxA | 0.076 | 0.071 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | PFHpA | 0.018 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | PFHxS | 0.288 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.67 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.67 | PFOA | 0.068 | 0.066 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.06 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.06 | PFNA | 0.302 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.06 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.06 | PFOS | 0.174 | 0.174 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.41 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.41 | PFDA | 0.039 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | PFUnA | 0.046 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | PFDoA | 0.151 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.27 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.26 | PFTrDA | 0.065 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.48 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | PFTeDA | 0.046 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | NMeFOSAA | 0.544 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | NEtFOSAA | 0.062 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.16 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 30/08/2018 2:42:47 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY43 | **Injection Vial** | 7 |
| **Sample ID** | L6 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:31:18 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_A |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.55 | PFBS | 0.295 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | PFHxA | 0.076 | 0.071 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | PFHpA | 0.020 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | PFHxS | 0.279 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.67 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.67 | PFOA | 0.065 | 0.066 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.06 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.06 | PFNA | 0.317 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.06 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.06 | PFOS | 0.180 | 0.174 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.41 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.41 | PFDA | 0.044 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | PFUnA | 0.048 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.01 | PFDoA | 0.157 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.26 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | PFTrDA | 0.063 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | PFTeDA | 0.048 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.56 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.56 | NMeFOSAA | 0.534 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | NEtFOSAA | 0.062 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.16 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 30/08/2018 2:42:56 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY44 | **Injection Vial** | 8 |
| **Sample ID** | L7 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:42:11 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_A |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.55 | PFBS | 0.297 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | PFHxA | 0.075 | 0.071 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.26 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.26 | PFHpA | 0.019 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | PFHxS | 0.281 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.66 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.66 | PFOA | 0.063 | 0.066 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.05 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.05 | PFNA | 0.296 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.04 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.04 | PFOS | 0.174 | 0.174 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.40 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.40 | PFDA | 0.044 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.72 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.72 | PFUnA | 0.051 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.00 | PFDoA | 0.166 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.25 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | PFTrDA | 0.063 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | PFTeDA | 0.048 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.55 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.55 | NMeFOSAA | 0.574 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.72 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.72 | NEtFOSAA | 0.065 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.16 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 30/08/2018 2:10:41 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY38 | **Injection Vial** | 16 |
| **Sample ID** | L1 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-28T20:04:50 | **Data File** | 18-0511_18-0517.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_R |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.53 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.53 | PFBS | 0.305 | 0.291 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.84 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.34 | PFHxA | 0.054 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.25 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.24 | PFHpA | 0.031 | 0.023 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.27 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.27 | PFHxS | 0.281 | 0.291 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.65 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.65 | PFOA | 0.080 | 0.069 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.05 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.05 | PFNA | 0.321 | 0.297 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.04 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.04 | PFOS | 0.212 | 0.181 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.40 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.39 | PFDA | 0.058 | 0.050 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.72 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.71 | PFUnA | 0.080 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.00 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 3.99 | PFDoA | 0.162 | 0.162 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.24 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.24 | PFTrDA | 0.071 | 0.067 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.45 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.45 | PFTeDA | 0.057 | 0.050 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.55 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.55 | NMeFOSAA | 0.786 | 0.583 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.71 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.71 | NEtFOSAA | 0.087 | 0.057 | |
| PFBA | 213.0 / 169.0 | 1.11 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 30/08/2018 2:10:48 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY39 | **Injection Vial** | 17 |
| **Sample ID** | L2 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-28T20:15:41 | **Data File** | 18-0511_18-0517.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_R |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.54 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.54 | PFBS | 0.281 | 0.291 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.85 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.85 | PFHxA | 0.082 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.25 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.25 | PFHpA | 0.025 | 0.023 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.27 | PFHxS | 0.290 | 0.291 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.66 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.65 | PFOA | 0.070 | 0.069 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.05 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.05 | PFNA | 0.270 | 0.297 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.04 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.04 | PFOS | 0.167 | 0.181 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.40 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.40 | PFDA | 0.062 | 0.050 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.71 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.71 | PFUnA | 0.071 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.00 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.00 | PFDoA | 0.148 | 0.162 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.24 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.24 | PFTrDA | 0.066 | 0.067 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.45 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.45 | PFTeDA | 0.052 | 0.050 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.55 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.55 | NMeFOSAA | 0.586 | 0.583 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.71 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.72 | NEtFOSAA | 0.047 | 0.057 | ü |
| PFBA | 213.0 / 169.0 | 1.13 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 30/08/2018 2:10:54 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY40 | **Injection Vial** | 18 |
| **Sample ID** | L3 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-28T20:26:32 | **Data File** | 18-0511_18-0517.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_R |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.53 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.53 | PFBS | 0.297 | 0.291 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.85 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.85 | PFHxA | 0.072 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.25 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.25 | PFHpA | 0.020 | 0.023 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.27 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.27 | PFHxS | 0.316 | 0.291 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.66 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.65 | PFOA | 0.068 | 0.069 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.05 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.05 | PFNA | 0.299 | 0.297 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.04 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.04 | PFOS | 0.185 | 0.181 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.40 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.40 | PFDA | 0.048 | 0.050 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.72 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.72 | PFUnA | 0.055 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.00 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.00 | PFDoA | 0.172 | 0.162 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.24 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.24 | PFTrDA | 0.068 | 0.067 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.45 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.45 | PFTeDA | 0.050 | 0.050 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.55 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.55 | NMeFOSAA | 0.519 | 0.583 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.71 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.71 | NEtFOSAA | 0.050 | 0.057 | ü |
| PFBA | 213.0 / 169.0 | 1.14 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 30/08/2018 2:11:04 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY41 | **Injection Vial** | 19 |
| **Sample ID** | L4 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-28T20:37:24 | **Data File** | 18-0511_18-0517.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_R |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.54 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.53 | PFBS | 0.299 | 0.291 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.85 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.85 | PFHxA | 0.075 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.25 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.25 | PFHpA | 0.023 | 0.023 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.27 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.27 | PFHxS | 0.298 | 0.291 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.66 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.66 | PFOA | 0.067 | 0.069 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.05 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.05 | PFNA | 0.310 | 0.297 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.04 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.04 | PFOS | 0.184 | 0.181 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.40 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.40 | PFDA | 0.049 | 0.050 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.72 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.71 | PFUnA | 0.046 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.00 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.00 | PFDoA | 0.170 | 0.162 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.24 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.24 | PFTrDA | 0.070 | 0.067 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.45 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.45 | PFTeDA | 0.050 | 0.050 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.55 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.55 | NMeFOSAA | 0.547 | 0.583 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.71 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.72 | NEtFOSAA | 0.063 | 0.057 | ü |
| PFBA | 213.0 / 169.0 | 1.14 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 30/08/2018 2:11:10 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY42 | **Injection Vial** | 20 |
| **Sample ID** | L5 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-28T20:48:15 | **Data File** | 18-0511_18-0517.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_R |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.53 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.53 | PFBS | 0.280 | 0.291 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.84 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.84 | PFHxA | 0.076 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.24 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.24 | PFHpA | 0.020 | 0.023 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.26 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.26 | PFHxS | 0.284 | 0.291 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.64 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.64 | PFOA | 0.068 | 0.069 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.03 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.03 | PFNA | 0.299 | 0.297 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.03 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.03 | PFOS | 0.176 | 0.181 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.38 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.38 | PFDA | 0.049 | 0.050 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.70 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.70 | PFUnA | 0.051 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 3.98 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 3.98 | PFDoA | 0.164 | 0.162 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.22 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.22 | PFTrDA | 0.063 | 0.067 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.44 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.44 | PFTeDA | 0.048 | 0.050 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.54 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.53 | NMeFOSAA | 0.579 | 0.583 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.70 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.70 | NEtFOSAA | 0.064 | 0.057 | ü |
| PFBA | 213.0 / 169.0 | 1.14 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 30/08/2018 2:11:15 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY43 | **Injection Vial** | 21 |
| **Sample ID** | L6 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-28T20:59:08 | **Data File** | 18-0511_18-0517.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_R |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.53 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.53 | PFBS | 0.290 | 0.291 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.84 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.84 | PFHxA | 0.079 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.25 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.25 | PFHpA | 0.019 | 0.023 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.27 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.27 | PFHxS | 0.285 | 0.291 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.65 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.65 | PFOA | 0.065 | 0.069 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.04 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.04 | PFNA | 0.302 | 0.297 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.04 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.04 | PFOS | 0.175 | 0.181 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.39 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.39 | PFDA | 0.045 | 0.050 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.71 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.71 | PFUnA | 0.050 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 3.99 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 3.99 | PFDoA | 0.166 | 0.162 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.24 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.24 | PFTrDA | 0.067 | 0.067 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.45 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.45 | PFTeDA | 0.049 | 0.050 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.55 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.55 | NMeFOSAA | 0.528 | 0.583 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.71 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.71 | NEtFOSAA | 0.061 | 0.057 | ü |
| PFBA | 213.0 / 169.0 | 1.14 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 30/08/2018 2:11:21 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY44 | **Injection Vial** | 22 |
| **Sample ID** | L7 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-28T21:09:59 | **Data File** | 18-0511_18-0517.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_R |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.54 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.54 | PFBS | 0.282 | 0.291 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.85 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.85 | PFHxA | 0.074 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.25 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.25 | PFHpA | 0.020 | 0.023 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.27 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.27 | PFHxS | 0.288 | 0.291 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.66 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.65 | PFOA | 0.066 | 0.069 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.05 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.05 | PFNA | 0.302 | 0.297 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.05 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.04 | PFOS | 0.170 | 0.181 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.40 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.40 | PFDA | 0.043 | 0.050 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.71 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.71 | PFUnA | 0.049 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.00 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 3.99 | PFDoA | 0.154 | 0.162 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.24 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.23 | PFTrDA | 0.064 | 0.067 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.45 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.45 | PFTeDA | 0.048 | 0.050 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.55 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.55 | NMeFOSAA | 0.534 | 0.583 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.71 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.71 | NEtFOSAA | 0.061 | 0.057 | ü |
| PFBA | 213.0 / 169.0 | 1.14 | | | | |

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:40:00 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY45 ICC | **Injection Vial** | 10 |
| **Sample ID** | ICC | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T00:03:55 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_A |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Conc. (ng/L) | Target Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | 945.317305 | 1010.00 | 93.60 |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 935.514031 | 1010.00 | 92.63 |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 923.318126 | 1010.00 | 91.42 |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 976.518151 | 1010.00 | 96.68 |
| PFHpA_1 | 363.0 / 319.0 | 2.26 | 915.508298 | 1000.00 | 91.55 |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | 790.761915 | 1000.00 | 79.08 |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | 965.455677 | 1010.00 | 95.59 |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | 995.242077 | 1010.00 | 98.54 |
| PFOA_1 | 413.0 / 369.0 | 2.67 | 918.699957 | 1000.00 | 91.87 |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 955.460599 | 1000.00 | 95.55 |
| PFNA_1 | 463.0 / 419.0 | 3.05 | 945.837479 | 1000.00 | 94.58 |
| PFNA_2 | 463.0 / 219.0 | 3.05 | 977.984830 | 1000.00 | 97.80 |
| PFOS_1 | 499.0 / 80.0 | 3.05 | 835.338725 | 1000.00 | 83.53 |
| PFOS_2 | 499.0 / 99.0 | 3.05 | 883.759256 | 1000.00 | 88.38 |
| PFDA_1 | 513.0 / 469.0 | 3.40 | 993.565292 | 1000.00 | 99.36 |
| PFDA_2 | 513.0 / 219.0 | 3.41 | 898.454706 | 1000.00 | 89.85 |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | 945.238689 | 1000.00 | 94.52 |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | 853.408516 | 1000.00 | 85.34 |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | 1005.730822 | 1000.00 | 100.57 |
| PFDoA_2 | 613.0 / 319.0 | 4.01 | 983.797996 | 1000.00 | 98.38 |
| PFTrDA_1 | 663.0 / 619.0 | 4.25 | 1016.995563 | 1000.00 | 101.70 |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | 1017.066538 | 1000.00 | 101.71 |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | 1006.665369 | 1000.00 | 100.67 |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | 964.000724 | 1000.00 | 96.40 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.56 | 1038.070101 | 1000.00 | 103.81 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.56 | 1030.221581 | 1000.00 | 103.02 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.72 | 932.896900 | 1000.00 | 93.29 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.72 | 992.807735 | 1000.00 | 99.28 |
| PFBA | 213.0 / 169.0 | 1.17 | 932.851946 | 1000.00 | 93.29 |

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:40:06 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY42 CCV | **Injection Vial** | 38 |
| **Sample ID** | CCV | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T06:02:47 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_A |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Conc. (ng/L) | Target Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | 2632.698149 | 2525.00 | 104.27 |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 2629.163632 | 2525.00 | 104.13 |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 2773.254653 | 2525.00 | 109.83 |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 2673.395167 | 2525.00 | 105.88 |
| PFHpA_1 | 363.0 / 319.0 | 2.26 | 2107.090305 | 2500.00 | 84.28 |
| PFHpA_2 | 363.0 / 169.0 | 2.26 | 2394.034106 | 2500.00 | 95.76 |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | 2459.194498 | 2525.00 | 97.39 |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | 2412.304661 | 2525.00 | 95.54 |
| PFOA_1 | 413.0 / 369.0 | 2.66 | 2290.634212 | 2500.00 | 91.63 |
| PFOA_2 | 413.0 / 169.0 | 2.66 | 2351.499400 | 2500.00 | 94.06 |
| PFNA_1 | 463.0 / 419.0 | 3.05 | 2450.064985 | 2500.00 | 98.00 |
| PFNA_2 | 463.0 / 219.0 | 3.05 | 2451.927030 | 2500.00 | 98.08 |
| PFOS_1 | 499.0 / 80.0 | 3.04 | 2376.576536 | 2500.00 | 95.06 |
| PFOS_2 | 499.0 / 99.0 | 3.04 | 2402.769604 | 2500.00 | 96.11 |
| PFDA_1 | 513.0 / 469.0 | 3.40 | 2413.882726 | 2500.00 | 96.56 |
| PFDA_2 | 513.0 / 219.0 | 3.40 | 2416.808757 | 2500.00 | 96.67 |
| PFUnA_1 | 563.0 / 519.0 | 3.72 | 2386.400763 | 2500.00 | 95.46 |
| PFUnA_2 | 563.0 / 269.0 | 3.72 | 2171.743398 | 2500.00 | 86.87 |
| PFDoA_1 | 613.0 / 569.0 | 4.00 | 2541.861858 | 2500.00 | 101.67 |
| PFDoA_2 | 613.0 / 319.0 | 4.00 | 2592.319057 | 2500.00 | 103.69 |
| PFTrDA_1 | 663.0 / 619.0 | 4.25 | 2549.148161 | 2500.00 | 101.97 |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | 2604.881254 | 2500.00 | 104.20 |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | 2513.784627 | 2500.00 | 100.55 |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | 2442.231780 | 2500.00 | 97.69 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.55 | 2492.751041 | 2500.00 | 99.71 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.55 | 2380.120387 | 2500.00 | 95.20 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.72 | 2653.899480 | 2500.00 | 106.16 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.72 | 2532.714032 | 2500.00 | 101.31 |
| PFBA | 213.0 / 169.0 | 1.16 | 2308.516872 | 2500.00 | 92.34 |

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:40:16 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY41 CCV | **Injection Vial** | 46 |
| **Sample ID** | CCV | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T07:40:38 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_A |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Conc. (ng/L) | Target Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | 1045.035737 | 1010.00 | 103.47 |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 1034.084270 | 1010.00 | 102.38 |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 1034.046916 | 1010.00 | 102.38 |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 1043.126148 | 1010.00 | 103.28 |
| PFHpA_1 | 363.0 / 319.0 | 2.25 | 944.093451 | 1000.00 | 94.41 |
| PFHpA_2 | 363.0 / 169.0 | 2.25 | 964.454229 | 1000.00 | 96.45 |
| PFHxS_1 | 399.0 / 80.0 | 2.27 | 968.676582 | 1010.00 | 95.91 |
| PFHxS_2 | 399.0 / 99.0 | 2.27 | 954.204725 | 1010.00 | 94.48 |
| PFOA_1 | 413.0 / 369.0 | 2.65 | 944.867186 | 1000.00 | 94.49 |
| PFOA_2 | 413.0 / 169.0 | 2.65 | 895.448197 | 1000.00 | 89.54 |
| PFNA_1 | 463.0 / 419.0 | 3.04 | 960.424992 | 1000.00 | 96.04 |
| PFNA_2 | 463.0 / 219.0 | 3.04 | 960.791914 | 1000.00 | 96.08 |
| PFOS_1 | 499.0 / 80.0 | 3.04 | 1046.151446 | 1000.00 | 104.62 |
| PFOS_2 | 499.0 / 99.0 | 3.04 | 1030.798386 | 1000.00 | 103.08 |
| PFDA_1 | 513.0 / 469.0 | 3.39 | 943.222576 | 1000.00 | 94.32 |
| PFDA_2 | 513.0 / 219.0 | 3.39 | 866.268108 | 1000.00 | 86.63 |
| PFUnA_1 | 563.0 / 519.0 | 3.71 | 922.774975 | 1000.00 | 92.28 |
| PFUnA_2 | 563.0 / 269.0 | 3.70 | 1003.316077 | 1000.00 | 100.33 |
| PFDoA_1 | 613.0 / 569.0 | 3.99 | 1038.554705 | 1000.00 | 103.86 |
| PFDoA_2 | 613.0 / 319.0 | 3.99 | 998.658194 | 1000.00 | 99.87 |
| PFTrDA_1 | 663.0 / 619.0 | 4.24 | 1057.936564 | 1000.00 | 105.79 |
| PFTrDA_2 | 663.0 / 169.0 | 4.24 | 1091.130829 | 1000.00 | 109.11 |
| PFTeDA_1 | 713.0 / 669.0 | 4.46 | 1012.857374 | 1000.00 | 101.29 |
| PFTeDA_2 | 713.0 / 169.0 | 4.45 | 1069.452128 | 1000.00 | 106.95 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.54 | 1279.387236 | 1000.00 | 127.94 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.54 | 1294.528690 | 1000.00 | 129.45 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.70 | 824.462970 | 1000.00 | 82.45 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.71 | 851.513995 | 1000.00 | 85.15 |
| PFBA | 213.0 / 169.0 | 1.16 | 1241.361787 | 1000.00 | 124.14 |

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 1:42:29 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY45 ICC | **Injection Vial** | 10 |
| **Sample ID** | ICC | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T00:03:55 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_SIS_A |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Conc. (ng/L) | Target Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.17 | 256.423433 | 250.00 | 102.57 |
| 13C2-PFDoA | 615.0 / 570.0 | 4.00 | 236.412962 | 250.00 | 94.57 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.55 | 229.007354 | 250.00 | 91.60 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.71 | 244.394489 | 250.00 | 97.76 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 257.007980 | 250.00 | 102.80 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 257.575529 | 250.00 | 103.03 |
| 13C8-PFOA | 421.0 / 376.0 | 2.66 | 253.920137 | 250.00 | 101.57 |
| 13C9-PFNA | 472.0 / 427.0 | 3.04 | 266.243110 | 250.00 | 106.50 |
| 13C6-PFDA | 519.0 / 474.0 | 3.39 | 253.349129 | 250.00 | 101.34 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.71 | 245.125330 | 250.00 | 98.05 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.47 | 231.378794 | 250.00 | 92.55 |
| 13C3-PFBS | 302.0 / 99.0 | 1.53 | 214.031789 | 232.25 | 92.16 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.27 | 204.130881 | 236.50 | 86.31 |
| 13C8-PFOS | 507.0 / 99.0 | 3.03 | 237.268489 | 239.50 | 99.07 |

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 1:42:40 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY42 CCV | **Injection Vial** | 38 |
| **Sample ID** | CCV | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T06:02:47 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_SIS_A |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Conc. (ng/L) | Target Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.16 | 245.196843 | 250.00 | 98.08 |
| 13C2-PFDoA | 615.0 / 570.0 | 3.99 | 260.396935 | 250.00 | 104.16 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.55 | 272.635552 | 250.00 | 109.05 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.71 | 226.675426 | 250.00 | 90.67 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 246.708303 | 250.00 | 98.68 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 244.690747 | 250.00 | 97.88 |
| 13C8-PFOA | 421.0 / 376.0 | 2.65 | 263.709916 | 250.00 | 105.48 |
| 13C9-PFNA | 472.0 / 427.0 | 3.04 | 257.313486 | 250.00 | 102.93 |
| 13C6-PFDA | 519.0 / 474.0 | 3.39 | 273.403566 | 250.00 | 109.36 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.70 | 254.913233 | 250.00 | 101.97 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.46 | 260.143023 | 250.00 | 104.06 |
| 13C3-PFBS | 302.0 / 99.0 | 1.53 | 207.246442 | 232.25 | 89.23 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.27 | 221.264607 | 236.50 | 93.56 |
| 13C8-PFOS | 507.0 / 99.0 | 3.03 | 241.729320 | 239.50 | 100.93 |

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 1:42:45 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY41 CCV | **Injection Vial** | 46 |
| **Sample ID** | CCV | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T07:40:38 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_SIS_A |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Conc. (ng/L) | Target Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.16 | 242.929035 | 250.00 | 97.17 |
| 13C2-PFDoA | 615.0 / 570.0 | 3.98 | 241.616856 | 250.00 | 96.65 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.53 | 203.401243 | 250.00 | 81.36 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.69 | 295.605155 | 250.00 | 118.24 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.84 | 251.148906 | 250.00 | 100.46 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.24 | 250.673692 | 250.00 | 100.27 |
| 13C8-PFOA | 421.0 / 376.0 | 2.64 | 255.942348 | 250.00 | 102.38 |
| 13C9-PFNA | 472.0 / 427.0 | 3.03 | 260.283573 | 250.00 | 104.11 |
| 13C6-PFDA | 519.0 / 474.0 | 3.38 | 264.297912 | 250.00 | 105.72 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.69 | 253.122689 | 250.00 | 101.25 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.45 | 235.846081 | 250.00 | 94.34 |
| 13C3-PFBS | 302.0 / 99.0 | 1.53 | 199.706162 | 232.25 | 85.99 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.26 | 222.467806 | 236.50 | 94.07 |
| 13C8-PFOS | 507.0 / 99.0 | 3.02 | 227.975939 | 239.50 | 95.19 |

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:13:00 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY45 ICC | **Injection Vial** | 24 |
| **Sample ID** | ICC | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-28T21:31:41 | **Data File** | 18-0511_18-0517.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_R |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Conc. (ng/L) | Target Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.53 | 899.175195 | 1010.00 | 89.03 |
| PFBS_2 | 298.9 / 99.0 | 1.53 | 941.677693 | 1010.00 | 93.24 |
| PFHxA_1 | 313.0 / 269.0 | 1.85 | 926.144086 | 1010.00 | 91.70 |
| PFHxA_2 | 313.0 / 119.0 | 1.85 | 881.587461 | 1010.00 | 87.29 |
| PFHpA_1 | 363.0 / 319.0 | 2.25 | 884.166721 | 1000.00 | 88.42 |
| PFHpA_2 | 363.0 / 169.0 | 2.25 | 874.558078 | 1000.00 | 87.46 |
| PFHxS_1 | 399.0 / 80.0 | 2.27 | 908.144091 | 1010.00 | 89.92 |
| PFHxS_2 | 399.0 / 99.0 | 2.27 | 981.070873 | 1010.00 | 97.14 |
| PFOA_1 | 413.0 / 369.0 | 2.66 | 907.407600 | 1000.00 | 90.74 |
| PFOA_2 | 413.0 / 169.0 | 2.65 | 869.229245 | 1000.00 | 86.92 |
| PFNA_1 | 463.0 / 419.0 | 3.05 | 940.578444 | 1000.00 | 94.06 |
| PFNA_2 | 463.0 / 219.0 | 3.05 | 1027.633915 | 1000.00 | 102.76 |
| PFOS_1 | 499.0 / 80.0 | 3.04 | 910.670434 | 1000.00 | 91.07 |
| PFOS_2 | 499.0 / 99.0 | 3.04 | 947.472421 | 1000.00 | 94.75 |
| PFDA_1 | 513.0 / 469.0 | 3.40 | 944.839755 | 1000.00 | 94.48 |
| PFDA_2 | 513.0 / 219.0 | 3.40 | 837.447659 | 1000.00 | 83.74 |
| PFUnA_1 | 563.0 / 519.0 | 3.71 | 862.618951 | 1000.00 | 86.26 |
| PFUnA_2 | 563.0 / 269.0 | 3.71 | 941.076705 | 1000.00 | 94.11 |
| PFDoA_1 | 613.0 / 569.0 | 4.00 | 951.418801 | 1000.00 | 95.14 |
| PFDoA_2 | 613.0 / 319.0 | 4.00 | 955.108572 | 1000.00 | 95.51 |
| PFTrDA_1 | 663.0 / 619.0 | 4.24 | 964.723863 | 1000.00 | 96.47 |
| PFTrDA_2 | 663.0 / 169.0 | 4.23 | 984.141074 | 1000.00 | 98.41 |
| PFTeDA_1 | 713.0 / 669.0 | 4.45 | 1005.572055 | 1000.00 | 100.56 |
| PFTeDA_2 | 713.0 / 169.0 | 4.45 | 946.095490 | 1000.00 | 94.61 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.55 | 1068.319683 | 1000.00 | 106.83 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.55 | 930.744436 | 1000.00 | 93.07 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.71 | 950.891484 | 1000.00 | 95.09 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.71 | 1072.173371 | 1000.00 | 107.22 |
| PFBA | 213.0 / 169.0 | 1.14 | 1083.124444 | 1000.00 | 108.31 |

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:13:06 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY41 CCV | **Injection Vial** | 19 |
| **Sample ID** | CCV | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-29T00:58:01 | **Data File** | 18-0511_18-0517.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_R |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Conc. (ng/L) | Target Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.53 | 946.628592 | 1010.00 | 93.73 |
| PFBS_2 | 298.9 / 99.0 | 1.53 | 975.673279 | 1010.00 | 96.60 |
| PFHxA_1 | 313.0 / 269.0 | 1.84 | 969.967166 | 1010.00 | 96.04 |
| PFHxA_2 | 313.0 / 119.0 | 1.84 | 1059.647323 | 1010.00 | 104.92 |
| PFHpA_1 | 363.0 / 319.0 | 2.25 | 919.580754 | 1000.00 | 91.96 |
| PFHpA_2 | 363.0 / 169.0 | 2.24 | 921.904422 | 1000.00 | 92.19 |
| PFHxS_1 | 399.0 / 80.0 | 2.27 | 965.200946 | 1010.00 | 95.56 |
| PFHxS_2 | 399.0 / 99.0 | 2.27 | 996.954633 | 1010.00 | 98.71 |
| PFOA_1 | 413.0 / 369.0 | 2.65 | 932.514474 | 1000.00 | 93.25 |
| PFOA_2 | 413.0 / 169.0 | 2.65 | 899.481477 | 1000.00 | 89.95 |
| PFNA_1 | 463.0 / 419.0 | 3.04 | 1002.187874 | 1000.00 | 100.22 |
| PFNA_2 | 463.0 / 219.0 | 3.04 | 1099.931508 | 1000.00 | 109.99 |
| PFOS_1 | 499.0 / 80.0 | 3.04 | 1039.681997 | 1000.00 | 103.97 |
| PFOS_2 | 499.0 / 99.0 | 3.04 | 1109.527969 | 1000.00 | 110.95 |
| PFDA_1 | 513.0 / 469.0 | 3.39 | 957.117269 | 1000.00 | 95.71 |
| PFDA_2 | 513.0 / 219.0 | 3.39 | 772.627526 | 1000.00 | 77.26 |
| PFUnA_1 | 563.0 / 519.0 | 3.71 | 941.759513 | 1000.00 | 94.18 |
| PFUnA_2 | 563.0 / 269.0 | 3.71 | 1119.267675 | 1000.00 | 111.93 |
| PFDoA_1 | 613.0 / 569.0 | 3.99 | 966.412096 | 1000.00 | 96.64 |
| PFDoA_2 | 613.0 / 319.0 | 3.99 | 920.893085 | 1000.00 | 92.09 |
| PFTrDA_1 | 663.0 / 619.0 | 4.23 | 987.761338 | 1000.00 | 98.78 |
| PFTrDA_2 | 663.0 / 169.0 | 4.23 | 929.522754 | 1000.00 | 92.95 |
| PFTeDA_1 | 713.0 / 669.0 | 4.45 | 1012.400917 | 1000.00 | 101.24 |
| PFTeDA_2 | 713.0 / 169.0 | 4.45 | 971.566409 | 1000.00 | 97.16 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.55 | 1077.774773 | 1000.00 | 107.78 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.54 | 995.090103 | 1000.00 | 99.51 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.71 | 961.362287 | 1000.00 | 96.14 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.70 | 1063.459152 | 1000.00 | 106.35 |
| PFBA | 213.0 / 169.0 | 1.14 | 1163.278486 | 1000.00 | 116.33 |

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 2:13:15 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY42 CCV | **Injection Vial** | 20 |
| **Sample ID** | CCV | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-29T02:46:39 | **Data File** | 18-0511_18-0517.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_R |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Conc. (ng/L) | Target Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.54 | 2591.790173 | 2525.00 | 102.65 |
| PFBS_2 | 298.9 / 99.0 | 1.54 | 2585.310488 | 2525.00 | 102.39 |
| PFHxA_1 | 313.0 / 269.0 | 1.84 | 2486.211609 | 2525.00 | 98.46 |
| PFHxA_2 | 313.0 / 119.0 | 1.84 | 2399.592339 | 2525.00 | 95.03 |
| PFHpA_1 | 363.0 / 319.0 | 2.25 | 2143.523387 | 2500.00 | 85.74 |
| PFHpA_2 | 363.0 / 169.0 | 2.25 | 2058.088760 | 2500.00 | 82.32 |
| PFHxS_1 | 399.0 / 80.0 | 2.27 | 2485.428979 | 2525.00 | 98.43 |
| PFHxS_2 | 399.0 / 99.0 | 2.27 | 2418.105170 | 2525.00 | 95.77 |
| PFOA_1 | 413.0 / 369.0 | 2.65 | 2301.727409 | 2500.00 | 92.07 |
| PFOA_2 | 413.0 / 169.0 | 2.64 | 2240.850501 | 2500.00 | 89.63 |
| PFNA_1 | 463.0 / 419.0 | 3.04 | 2274.392560 | 2500.00 | 90.98 |
| PFNA_2 | 463.0 / 219.0 | 3.04 | 2379.666505 | 2500.00 | 95.19 |
| PFOS_1 | 499.0 / 80.0 | 3.03 | 2028.427880 | 2500.00 | 81.14 |
| PFOS_2 | 499.0 / 99.0 | 3.03 | 2261.241648 | 2500.00 | 90.45 |
| PFDA_1 | 513.0 / 469.0 | 3.39 | 2279.529303 | 2500.00 | 91.18 |
| PFDA_2 | 513.0 / 219.0 | 3.38 | 2015.461396 | 2500.00 | 80.62 |
| PFUnA_1 | 563.0 / 519.0 | 3.70 | 2344.244090 | 2500.00 | 93.77 |
| PFUnA_2 | 563.0 / 269.0 | 3.70 | 2544.118392 | 2500.00 | 101.76 |
| PFDoA_1 | 613.0 / 569.0 | 3.98 | 2616.737723 | 2500.00 | 104.67 |
| PFDoA_2 | 613.0 / 319.0 | 3.98 | 2564.614197 | 2500.00 | 102.58 |
| PFTrDA_1 | 663.0 / 619.0 | 4.23 | 2554.381911 | 2500.00 | 102.18 |
| PFTrDA_2 | 663.0 / 169.0 | 4.22 | 2592.748585 | 2500.00 | 103.71 |
| PFTeDA_1 | 713.0 / 669.0 | 4.44 | 2529.377308 | 2500.00 | 101.18 |
| PFTeDA_2 | 713.0 / 169.0 | 4.44 | 2525.911432 | 2500.00 | 101.04 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.54 | 2598.914045 | 2500.00 | 103.96 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.54 | 2380.294157 | 2500.00 | 95.21 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.70 | 2330.063885 | 2500.00 | 93.20 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.70 | 2526.944041 | 2500.00 | 101.08 |
| PFBA | 213.0 / 169.0 | 1.14 | 2382.833799 | 2500.00 | 95.31 |

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 1:57:38 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY45 ICC | **Injection Vial** | 24 |
| **Sample ID** | ICC | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-28T21:31:41 | **Data File** | 18-0511_18-0517.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_SIS_R |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Conc. (ng/L) | Target Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.15 | 262.377969 | 250.00 | 104.95 |
| 13C2-PFDoA | 615.0 / 570.0 | 3.98 | 248.752108 | 250.00 | 99.50 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.54 | 264.705112 | 250.00 | 105.88 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.70 | 258.928916 | 250.00 | 103.57 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.83 | 246.400463 | 250.00 | 98.56 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.24 | 249.461907 | 250.00 | 99.78 |
| 13C8-PFOA | 421.0 / 376.0 | 2.65 | 248.412724 | 250.00 | 99.37 |
| 13C9-PFNA | 472.0 / 427.0 | 3.03 | 242.923118 | 250.00 | 97.17 |
| 13C6-PFDA | 519.0 / 474.0 | 3.38 | 247.738674 | 250.00 | 99.10 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.70 | 272.508574 | 250.00 | 109.00 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.45 | 246.047020 | 250.00 | 98.42 |
| 13C3-PFBS | 302.0 / 99.0 | 1.52 | 234.521477 | 232.25 | 100.98 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.26 | 254.132400 | 236.50 | 107.46 |
| 13C8-PFOS | 507.0 / 99.0 | 3.03 | 232.038491 | 239.25 | 96.99 |

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 1:57:44 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY41 CCV | **Injection Vial** | 19 |
| **Sample ID** | CCV | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-29T00:58:01 | **Data File** | 18-0511_18-0517.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_SIS_R |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Conc. (ng/L) | Target Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.15 | 271.412518 | 250.00 | 108.57 |
| 13C2-PFDoA | 615.0 / 570.0 | 3.98 | 256.816850 | 250.00 | 102.73 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.54 | 313.321471 | 250.00 | 125.33 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.70 | 315.369701 | 250.00 | 126.15 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.83 | 262.660478 | 250.00 | 105.06 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.23 | 261.866304 | 250.00 | 104.75 |
| 13C8-PFOA | 421.0 / 376.0 | 2.64 | 255.735525 | 250.00 | 102.29 |
| 13C9-PFNA | 472.0 / 427.0 | 3.03 | 256.758811 | 250.00 | 102.70 |
| 13C6-PFDA | 519.0 / 474.0 | 3.38 | 266.766660 | 250.00 | 106.71 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.69 | 261.998938 | 250.00 | 104.80 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.44 | 255.833059 | 250.00 | 102.33 |
| 13C3-PFBS | 302.0 / 99.0 | 1.52 | 264.603165 | 232.25 | 113.93 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.26 | 281.168493 | 236.50 | 118.89 |
| 13C8-PFOS | 507.0 / 99.0 | 3.02 | 273.786335 | 239.25 | 114.44 |

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 30/08/2018 1:57:50 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY42 CCV | **Injection Vial** | 20 |
| **Sample ID** | CCV | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-29T02:46:39 | **Data File** | 18-0511_18-0517.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_SIS_R |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Conc. (ng/L) | Target Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.15 | 272.192259 | 250.00 | 108.88 |
| 13C2-PFDoA | 615.0 / 570.0 | 3.97 | 239.812449 | 250.00 | 95.92 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.53 | 288.293967 | 250.00 | 115.32 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.69 | 279.953763 | 250.00 | 111.98 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.83 | 236.852067 | 250.00 | 94.74 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.24 | 222.708022 | 250.00 | 89.08 |
| 13C8-PFOA | 421.0 / 376.0 | 2.64 | 248.521328 | 250.00 | 99.41 |
| 13C9-PFNA | 472.0 / 427.0 | 3.02 | 235.745910 | 250.00 | 94.30 |
| 13C6-PFDA | 519.0 / 474.0 | 3.37 | 266.202359 | 250.00 | 106.48 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.69 | 252.992241 | 250.00 | 101.20 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.44 | 244.980626 | 250.00 | 97.99 |
| 13C3-PFBS | 302.0 / 99.0 | 1.52 | 211.637892 | 232.25 | 91.13 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.26 | 231.837538 | 236.50 | 98.03 |
| 13C8-PFOS | 507.0 / 99.0 | 3.02 | 262.389888 | 239.25 | 109.67 |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 30/08/2018 2:39:14 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY45 ICC | **Injection Vial** | 10 |
| **Sample ID** | ICC | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T00:03:55 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_A |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | 471977.28 | 945.317305 | 439.4 | false |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 137817.48 | 935.514031 | 245.3 | false |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 361850.29 | 923.318126 | 61.5 | false |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 28236.47 | 976.518151 | 62.8 | false |
| PFHpA_1 | 363.0 / 319.0 | 2.26 | 321110.09 | 915.508298 | 130.6 | false |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | 5718.08 | 790.761915 | 106.0 | false |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | 475710.02 | 965.455677 | 280.5 | false |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | 138090.54 | 995.242077 | 595.8 | false |
| PFOA_1 | 413.0 / 369.0 | 2.67 | 432964.90 | 918.699957 | 242.8 | false |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 29150.56 | 955.460599 | 155.6 | false |
| PFNA_1 | 463.0 / 419.0 | 3.05 | 427938.76 | 945.837479 | 279.6 | true |
| PFNA_2 | 463.0 / 219.0 | 3.05 | 136131.21 | 977.984830 | 322.9 | false |
| PFOS_1 | 499.0 / 80.0 | 3.05 | 663393.11 | 835.338725 | 242.7 | true |
| PFOS_2 | 499.0 / 99.0 | 3.05 | 122846.93 | 883.759256 | 364.1 | false |
| PFDA_1 | 513.0 / 469.0 | 3.40 | 518015.17 | 993.565292 | 343.0 | false |
| PFDA_2 | 513.0 / 219.0 | 3.41 | 21682.87 | 898.454706 | 172.0 | false |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | 513657.73 | 945.238689 | 227.0 | false |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | 24340.58 | 853.408516 | 164.8 | true |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | 482306.74 | 1005.730822 | 233.1 | false |
| PFDoA_2 | 613.0 / 319.0 | 4.01 | 76159.29 | 983.797996 | 206.3 | false |
| PFTrDA_1 | 663.0 / 619.0 | 4.25 | 458900.12 | 1016.995563 | 304.9 | false |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | 29104.92 | 1017.066538 | 254.6 | false |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | 510091.48 | 1006.665369 | 628.7 | false |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | 23391.32 | 964.000724 | 361.4 | false |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.56 | 85978.48 | 1038.070101 | 656.1 | false |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.56 | 47649.73 | 1030.221581 | 401.3 | false |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.72 | 93212.32 | 932.896900 | 545.1 | false |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.72 | 5846.35 | 992.807735 | 145.7 | false |
| PFBA | 213.0 / 169.0 | 1.17 | 710407.76 | 932.851946 | 406.5 | true |

Sample Summary

Client: Tetra Tech Inc.
SDG: 18-0520
Project/Site: Former Naval Air Station, Brunswick, Maine
CTO: WE21

| Lab Sample ID | Client Sample ID | Matrix | Collection Date | Receipt Date |
|---|---|---|---|---|
| CR635PB-FS | Procedural Blank | WATER | 8/22/2018 | 8/22/2018 |
| CR636LCS-FS | Laboratory Control Sample | WATER | 8/22/2018 | 8/22/2018 |
| J7401-FS | NASB-BLL15-GW-FB01-080918 | QC | 8/9/2018 | 8/10/2018 |

# QA/QC Summary
# Batch 18-0520

| | |
|---|---|
| Project: | CTO-WE21: Former Naval Air Station, Brunswick, Maine |
| Parameters: | PFAS |
| Laboratory: | Battelle, Norwell, MA |
| Matrix: | QC |
| Data Set: | DP-18-0234 |
| Analytical SOP: | 5-369 |
| Method Reference: | PFAS to QSM 5.1 Table B-15 |

| Sample Custody | | |
|---|---|---|
| Collection Date | Receipt Date | Temp (°C) |
| 8/9/2018 | 8/10/2018 | 0.9 |
| Corrective Actions | None. | |
| Sample Storage | The water samples were stored refrigerated until extraction. | |
| Related samples | This FRB sample is related to the field samples in SDG 18-0500. | |

| | METHOD SUMMARIES |
|---|---|
| Sample Preparation | Water samples were spiked with surrogates in the original sample container from the field. The water was extracted using a weak ion exchange solid phase extraction (SPE) cartridge and eluted from the SPE with 0.4% $NH_3$ in methanol. Extracts were split and concentrated to dryness under nitrogen with a water bath set between 35 °C and 45 °C, reconstituted with 80:20 methanol/water (V/V) and fortified with internal standard. Extracts were transferred for LC-MS/MS analysis. |
| Prep comments | None. |
| Analysis | PFAS were measured by liquid chromatography tandem mass spectrometry (LC-MS/MS) in the multiple reaction monitoring (MRM). An initial calibration consisting of representative target analytes, labelled analogs, and internal standards was analyzed prior to analysis to demonstrate the linear range of analysis. Calibration verification was performed at the beginning and end of 10 injections and at the end of each sequence. Target PFAS were quantified using the isotope dilution method. Samples are reported in ng/L concentrations. |
| Analysis Comments | Samples analyzed on Sciex 5500 LC-MS/MS.<br><br>There were no detected results above the LOQ with ion ratios above 50% RPD. |

| Holding Times | Extraction Date(s) | Analysis Date(s) |
|---|---|---|
| | 8/22/2018 | 8/24 – 25/2018 |

| | |
|---|---|
| Procedural Blank (PB) | A PB was prepared with this analytical batch to ensure the sample extraction and analysis methods are free of contamination. |
| ≤ ½ the LOQ Samples >10x PB | One exceedance noted. |
| | PFOA in the LCS sample is "B" qualified as it was spiked at the 2x the LOQ and was detected at a concentration less than 10x the concentration in the blank. Note that the blank is less than ½ the LOQ and does not fail blank criteria. |

# QA/QC Summary
# Batch 18-0520

| | |
|---|---|
| Laboratory Control Spike (LCS) | A LCS was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure accuracy. |
| Laboratory derived control limits for recovery | No exceedances noted. |
| | No comments. |

| | |
|---|---|
| Extracted Internal Standard Analytes | Labelled analog compounds were added prior to extraction. The recoveries are calculated to measure extraction efficiency. |
| 50-150% of true value | No exceedances noted. |
| | No comments. |

| | |
|---|---|
| Initial Calibration (ICAL) | The LC-MS/MS was calibrated with multi-level calibration curve for all compounds using linear or quadradic curve fitting. |
| +/- 30% of true value, $R^2 \geq 0.99$ | No exceedances noted. |
| | No comments. |

| | |
|---|---|
| Independent Calibration Check (ICC) | The independent check was run after each initial calibration to verify the calibration. This standard is from a different source than the ICAL. |
| +/- 30% of true value | No exceedances noted. |
| | No comments. |

| | |
|---|---|
| Continuing Calibration Verification (CCV) | Continuing calibration standards were run at the beginning and end of 10 injections and at the end of the sequence to ensure that initial calibration is still valid. |
| +/- 30% of true value | No exceedances noted. |
| | No comments. |

| | |
|---|---|
| Instrument Blank (IB) | Immediately following the highest standard analyzed and daily prior to sample analysis. |
| ≤ ½ the LOQ | No exceedances noted. |
| | No comments. |

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project Number: 100122108-CTOWE21
Preparation Batch: 18-0520
Data Set: DP-18-0234
Test Code: Master_369

| QC Parameter: | Exceed: | Justification: |
|---|---|---|
| Procedural Blank | 0 | None |
| PB Measurement Quality Objective | 1 | PFOA was detected at less than ten times the blank concentration in the LCS. Integrations and prep records were verified. DMS 8/29/2018 |
| Laboratory Control Sample | 0 | None |
| Matrix Spike / Matrix Spike Duplicate Recovery | NA | NA |
| Matrix Spike / Matrix Spike Duplicate Precision | NA | NA |
| Extracted Internal Standard Analytes (Surrogates) | 0 | None |
| Instrument Calibration | 0 | None |
| Instrument Blank | 0 | None |
| Independent Calibration Check | 0 | None |
| Continuing Calibration Verification | 0 | None |

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## MISCELLANEOUS DOCUMENTATION FORM

| | | | |
|---|---|---|---|
| **Project Title:** | CTO-WE21: Former Naval Air Station, B | **Data Set Number:** | DP-18-0234 |
| **Project Number:** | 100122108-CTOWE21 | **Prep Batch Number:** | 18-0520 |
| **Entered By:** | Denise Schumitz | **Entered On:** | 08/29/2018 |
| **Test Code (Matrix Type):** | Master_369(L) | | |

Samples that were manually integrated are noted on the quant reports with the comment (TRUE).
DMS 8/29/2018

JY38 is not being used for PFHpA in this method. There is no impact on the data once this point is removed from the calibration.
DMS 8/29/2018

**Task Leader Approval:**

**SupervisorApproval:**

**PM Approval:**

Digitally signed by Jonathan Thorn
Date: 2018.08.29 16:17:16 -04'00'

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

| Client ID | JY46 IB | | | |
|---|---|---|---|---|
| Battelle ID | JY46 IB_08/24/2018 | | | |
| Sample Type | IB | | | |
| Collection Date | NA | | | |
| Extraction Date | NA | | | |
| Analysis Date | 08/24/2018 | | | |
| Analytical Instrument | Sciex 5500 LC/MS/MS | | | |
| % Moisture | NA | | | |
| Matrix | Water | | | |
| Sample Size | 0.250 | | | |
| Size Unit-Basis | NA | | | |
| Units | ng/L | MDL | LOD | LOQ |
| PFBA | 0.50 U | 0.14 | 0.50 | 5.00 |
| PFHxA | 0.50 U | 0.19 | 0.50 | 5.00 |
| PFHpA | 0.50 U | 0.16 | 0.50 | 5.00 |
| PFOA | 0.50 U | 0.18 | 0.50 | 5.00 |
| PFNA | 1.00 U | 0.26 | 1.00 | 5.00 |
| PFDA | 0.50 U | 0.16 | 0.50 | 5.00 |
| PFUnA | 1.00 U | 0.29 | 1.00 | 5.00 |
| PFDoA | 0.50 U | 0.18 | 0.50 | 5.00 |
| PFTrDA | 0.50 U | 0.15 | 0.50 | 5.00 |
| PFTeDA | 1.00 U | 0.25 | 1.00 | 5.00 |
| NMeFOSAA | 2.00 U | 0.56 | 2.00 | 5.00 |
| NEtFOSAA | 1.00 U | 0.49 | 1.00 | 5.00 |
| PFBS | 0.50 U | 0.13 | 0.50 | 5.00 |
| PFHxS | 0.40 U | 0.11 | 0.40 | 5.00 |
| PFOS | 0.50 U | 0.19 | 0.50 | 5.00 |
| ***Surrogate Recoveries (%)*** | | | | |
| 13C4-PFBA | 103 | | | |
| 13C5-PFHxA | 101 | | | |
| 13C4-PFHpA | 100 | | | |
| 13C8-PFOA | 106 | | | |
| 13C9-PFNA | 99 | | | |
| 13C6-PFDA | 111 | | | |
| 13C7-PFUnA | 103 | | | |
| 13C2-PFDoA | 108 | | | |
| 13C2-PFTeDA | 99 | | | |
| d3-MeFOSAA | 101 | | | |
| d5-EtFOSAA | 123 | | | |
| 13C3-PFBS | 100 | | | |
| 13C3-PFHxS | 99 | | | |
| 13C8-PFOS | 103 | | | |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

| Client ID | Procedural Blank | | | |
|---|---|---|---|---|
| Battelle ID | CR635PB-FS | | | |
| Sample Type | PB | | | |
| Collection Date | 08/22/2018 | | | |
| Extraction Date | 08/22/2018 | | | |
| Analysis Date | 08/25/2018 | | | |
| Analytical Instrument | Sciex 5500 LC/MS/MS | | | |
| % Moisture | NA | | | |
| Matrix | WATER | | | |
| Sample Size | 0.250 | | | |
| Size Unit-Basis | L | | | |
| Units | ng/L | MDL | LOD | LOQ |
| PFBA | 0.98 J | 0.14 | 0.50 | 5.00 |
| PFHxA | 0.50 U | 0.19 | 0.50 | 5.00 |
| PFHpA | 0.50 U | 0.16 | 0.50 | 5.00 |
| PFOA | 1.27 J | 0.18 | 0.50 | 5.00 |
| PFNA | 1.00 U | 0.26 | 1.00 | 5.00 |
| PFDA | 0.50 U | 0.16 | 0.50 | 5.00 |
| PFUnA | 1.00 U | 0.29 | 1.00 | 5.00 |
| PFDoA | 0.50 U | 0.18 | 0.50 | 5.00 |
| PFTrDA | 0.50 U | 0.15 | 0.50 | 5.00 |
| PFTeDA | 1.00 U | 0.25 | 1.00 | 5.00 |
| NMeFOSAA | 2.00 U | 0.56 | 2.00 | 5.00 |
| NEtFOSAA | 1.00 U | 0.49 | 1.00 | 5.00 |
| PFBS | 0.50 U | 0.13 | 0.50 | 5.00 |
| PFHxS | 0.40 U | 0.11 | 0.40 | 5.00 |
| PFOS | 0.21 J | 0.19 | 0.50 | 5.00 |

***Surrogate Recoveries (%)***

| | |
|---|---|
| 13C4-PFBA | 68 |
| 13C5-PFHxA | 84 |
| 13C4-PFHpA | 83 |
| 13C8-PFOA | 79 |
| 13C9-PFNA | 85 |
| 13C6-PFDA | 81 |
| 13C7-PFUnA | 76 |
| 13C2-PFDoA | 76 |
| 13C2-PFTeDA | 76 |
| d3-MeFOSAA | 79 |
| d5-EtFOSAA | 79 |
| 13C3-PFBS | 88 |
| 13C3-PFHxS | 88 |
| 13C8-PFOS | 86 |

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

| Client ID | Laboratory Control Sample | | | | | |
|---|---|---|---|---|---|---|
| Battelle ID | CR636LCS-FS | | | | | |
| Sample Type | LCS | | | | | |
| Collection Date | 08/22/2018 | | | | | |
| Extraction Date | 08/22/2018 | | | | | |
| Analysis Date | 08/25/2018 | | | | | |
| Analytical Instrument | Sciex 5500 LC/MS/MS | | | | | |
| % Moisture | NA | | | | | |
| Matrix | WATER | | | | | |
| Sample Size | 0.250 | | | | | |
| Size Unit-Basis | L | | | | Control Limits | |
| Units | ng/L | Target | Recovery | Qual | Lower | Upper |
| PFBA | 12.36 | 10.00 | 124 | | 61 | 139 |
| PFHxA | 10.45 | 10.10 | 103 | | 51 | 137 |
| PFHpA | 10.26 | 10.00 | 103 | | 48 | 136 |
| PFOA | 11.43 B | 10.00 | 114 | | 49 | 141 |
| PFNA | 10.84 | 10.00 | 108 | | 58 | 122 |
| PFDA | 10.35 | 10.00 | 104 | | 59 | 135 |
| PFUnA | 9.54 | 10.00 | 95 | | 64 | 134 |
| PFDoA | 10.87 | 10.00 | 109 | | 75 | 131 |
| PFTrDA | 11.83 | 10.00 | 118 | | 42 | 148 |
| PFTeDA | 11.14 | 10.00 | 111 | | 42 | 158 |
| NMeFOSAA | 11.81 | 10.00 | 118 | | 50 | 146 |
| NEtFOSAA | 11.31 | 10.00 | 113 | | 51 | 131 |
| PFBS | 10.38 | 10.10 | 103 | | 56 | 134 |
| PFHxS | 10.50 | 10.10 | 104 | | 52 | 128 |
| PFOS | 10.76 | 10.00 | 108 | | 40 | 144 |

***Surrogate Recoveries (%)***

| | |
|---|---|
| 13C4-PFBA | 75 |
| 13C5-PFHxA | 85 |
| 13C4-PFHpA | 94 |
| 13C8-PFOA | 88 |
| 13C9-PFNA | 87 |
| 13C6-PFDA | 84 |
| 13C7-PFUnA | 86 |
| 13C2-PFDoA | 83 |
| 13C2-PFTeDA | 78 |
| d3-MeFOSAA | 92 |
| d5-EtFOSAA | 82 |
| 13C3-PFBS | 95 |
| 13C3-PFHxS | 92 |
| 13C8-PFOS | 92 |

BATTELLE
It can be done

Glossary of Data Qualifiers

| Flag: | Application: |
|---|---|
| B | Analyte found in the sample at a concentration <10x the level found in the procedural blank |
| D | Dilution Run. Initial run outside the initial calibration range of the instrument |
| E | Estimate, result is greater than the highers concentration level in the calibration |
| H | Surrogate diluted out. Used when surrogate recovery is affected by excessive dilution of the sample extract. |
| J | Analyte detected below the Limit of Quantitation (LOQ) |
| ME | Significant Matrix Interference - Estimated value. |
| MI | Significant Matrix Interference - value could not be determined. |
| n | Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO), but meets secondary criteria |
| N | Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO) |
| NA | Not Applicable |
| T | Holding Time (HT) exceeded |
| U | Analyte not detected or detected below the Method detection limit (MDL) value, Limit of Detection (LOD) reported |

BATTELLE
It can be done

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21
Preparation Batch: 18-0520
Data Set: DP-18-0234

| | CR635PB-FS (Procedural Blank) | CR636LCS-FS (Laboratory Control Sample) | J7401-FS (NASB-BLL15-GW-FB01-080918) |
|---|---|---|---|
| PFBA | L | L | L |
| PFHxA | - | L | - |
| PFHpA | - | L | - |
| PFOA | L | L | L |
| PFNA | - | L | - |
| PFDA | - | L | - |
| PFUnA | - | L | - |
| PFDoA | - | L | - |
| PFTrDA | - | L | - |
| PFTeDA | - | L | - |
| NMeFOSAA | - | L | - |
| NEtFOSAA | - | L | - |
| PFBS | - | L | - |
| PFHxS | - | L/Br | - |
| PFOS | L/Br | L/Br | L/Br |

"L" :Linear
"Br": branched
"L/Br": Linear/Branched
"-": Not detected

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper |
|---|---|---|---|---|---|---|
| JY42 | L5 | 8/24/18 23:20 | 13C3-PFBA | 62,099.81 | 31,049.91 | 93,149.72 |

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper | Qualifier |
|---|---|---|---|---|---|---|---|
| JY38 | L1 | 8/24/18 22:36 | 13C3-PFBA | 55,737.70 | 31,049.91 | 93,149.72 | |
| JY39 | L2 | 8/24/18 22:47 | 13C3-PFBA | 54,856.95 | 31,049.91 | 93,149.72 | |
| JY40 | L3 | 8/24/18 22:58 | 13C3-PFBA | 57,614.29 | 31,049.91 | 93,149.72 | |
| JY41 | L4 | 8/24/18 23:09 | 13C3-PFBA | 57,883.97 | 31,049.91 | 93,149.72 | |
| JY42 | L5 | 8/24/18 23:20 | 13C3-PFBA | 62,099.81 | 31,049.91 | 93,149.72 | |
| JY43 | L6 | 8/24/18 23:31 | 13C3-PFBA | 58,707.76 | 31,049.91 | 93,149.72 | |
| JY44 | L7 | 8/24/18 23:42 | 13C3-PFBA | 56,480.01 | 31,049.91 | 93,149.72 | |
| JY46 IB | Instrument Blank | 8/24/18 23:53 | 13C3-PFBA | 55,663.08 | 31,049.91 | 93,149.72 | |
| JY45 ICC | ICC | 8/25/18 0:03 | 13C3-PFBA | 59,885.14 | 31,049.91 | 93,149.72 | |
| CR635PB-FS(3) | Procedural Blank | 8/25/18 1:09 | 13C3-PFBA | 63,890.01 | 31,049.91 | 93,149.72 | |
| CR636LCS-FS(3) | Laboratory Control Sample | 8/25/18 1:20 | 13C3-PFBA | 54,125.02 | 31,049.91 | 93,149.72 | |
| J7401-FS(3) | NASB-BLL15-GW-FB01-080918 | 8/25/18 1:30 | 13C3-PFBA | 47,260.33 | 31,049.91 | 93,149.72 | |
| JY41 CCV | CCV | 8/25/18 1:41 | 13C3-PFBA | 53,615.03 | 31,049.91 | 93,149.72 | |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper |
|---|---|---|---|---|---|---|
| JY42 | L5 | 8/24/18 23:20 | 13C2-PFOA | 92,608.08 | 46,304.04 | 138,912.12 |

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper | Qualifier |
|---|---|---|---|---|---|---|---|
| JY38 | L1 | 8/24/18 22:36 | 13C2-PFOA | 89,686.34 | 46,304.04 | 138,912.12 | |
| JY39 | L2 | 8/24/18 22:47 | 13C2-PFOA | 90,381.96 | 46,304.04 | 138,912.12 | |
| JY40 | L3 | 8/24/18 22:58 | 13C2-PFOA | 87,326.72 | 46,304.04 | 138,912.12 | |
| JY41 | L4 | 8/24/18 23:09 | 13C2-PFOA | 89,865.42 | 46,304.04 | 138,912.12 | |
| JY42 | L5 | 8/24/18 23:20 | 13C2-PFOA | 92,608.08 | 46,304.04 | 138,912.12 | |
| JY43 | L6 | 8/24/18 23:31 | 13C2-PFOA | 91,795.08 | 46,304.04 | 138,912.12 | |
| JY44 | L7 | 8/24/18 23:42 | 13C2-PFOA | 91,050.54 | 46,304.04 | 138,912.12 | |
| JY46 IB | Instrument Blank | 8/24/18 23:53 | 13C2-PFOA | 86,993.18 | 46,304.04 | 138,912.12 | |
| JY45 ICC | ICC | 8/25/18 0:03 | 13C2-PFOA | 94,996.84 | 46,304.04 | 138,912.12 | |
| CR635PB-FS(3) | Procedural Blank | 8/25/18 1:09 | 13C2-PFOA | 87,794.17 | 46,304.04 | 138,912.12 | |
| CR636LCS-FS(3) | Laboratory Control Sample | 8/25/18 1:20 | 13C2-PFOA | 76,087.27 | 46,304.04 | 138,912.12 | |
| J7401-FS(3) | NASB-BLL15-GW-FB01-080918 | 8/25/18 1:30 | 13C2-PFOA | 76,320.12 | 46,304.04 | 138,912.12 | |
| JY41 CCV | CCV | 8/25/18 1:41 | 13C2-PFOA | 88,803.80 | 46,304.04 | 138,912.12 | |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper |
|---|---|---|---|---|---|---|
| JY42 | L5 | 8/24/18 23:20 | 13C2-PFDA | 105,936.28 | 52,968.14 | 158,904.42 |

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper | Qualifier |
|---|---|---|---|---|---|---|---|
| JY38 | L1 | 8/24/18 22:36 | 13C2-PFDA | 101,703.93 | 52,968.14 | 158,904.42 | |
| JY39 | L2 | 8/24/18 22:47 | 13C2-PFDA | 104,669.39 | 52,968.14 | 158,904.42 | |
| JY40 | L3 | 8/24/18 22:58 | 13C2-PFDA | 99,261.32 | 52,968.14 | 158,904.42 | |
| JY41 | L4 | 8/24/18 23:09 | 13C2-PFDA | 100,506.14 | 52,968.14 | 158,904.42 | |
| JY42 | L5 | 8/24/18 23:20 | 13C2-PFDA | 105,936.28 | 52,968.14 | 158,904.42 | |
| JY43 | L6 | 8/24/18 23:31 | 13C2-PFDA | 113,124.25 | 52,968.14 | 158,904.42 | |
| JY44 | L7 | 8/24/18 23:42 | 13C2-PFDA | 103,798.12 | 52,968.14 | 158,904.42 | |
| JY46 IB | Instrument Blank | 8/24/18 23:53 | 13C2-PFDA | 98,444.02 | 52,968.14 | 158,904.42 | |
| JY45 ICC | ICC | 8/25/18 0:03 | 13C2-PFDA | 113,766.69 | 52,968.14 | 158,904.42 | |
| CR635PB-FS(3) | Procedural Blank | 8/25/18 1:09 | 13C2-PFDA | 106,743.63 | 52,968.14 | 158,904.42 | |
| CR636LCS-FS(3) | Laboratory Control Sample | 8/25/18 1:20 | 13C2-PFDA | 91,207.27 | 52,968.14 | 158,904.42 | |
| J7401-FS(3) | NASB-BLL15-GW-FB01-080918 | 8/25/18 1:30 | 13C2-PFDA | 84,986.73 | 52,968.14 | 158,904.42 | |
| JY41 CCV | CCV | 8/25/18 1:41 | 13C2-PFDA | 107,120.62 | 52,968.14 | 158,904.42 | |

Project Client: Tetra Tech
Project Name: CTO-WE21: Former Naval Air Station, Brunswick, Maine
Project No.: 100122108-CTOWE21

BATTELLE
It can be done

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper |
|---|---|---|---|---|---|---|
| JY42 | L5 | 8/24/18 23:20 | 13C4-PFOS | 32,248.02 | 16,124.01 | 48,372.03 |

| Sample Name | Sample ID | Analysis Date | Analyte | Area | Lower | Upper | Qualifier |
|---|---|---|---|---|---|---|---|
| JY38 | L1 | 8/24/18 22:36 | 13C4-PFOS | 33,175.18 | 16,124.01 | 48,372.03 | |
| JY39 | L2 | 8/24/18 22:47 | 13C4-PFOS | 31,211.04 | 16,124.01 | 48,372.03 | |
| JY40 | L3 | 8/24/18 22:58 | 13C4-PFOS | 31,393.82 | 16,124.01 | 48,372.03 | |
| JY41 | L4 | 8/24/18 23:09 | 13C4-PFOS | 31,692.96 | 16,124.01 | 48,372.03 | |
| JY42 | L5 | 8/24/18 23:20 | 13C4-PFOS | 32,248.02 | 16,124.01 | 48,372.03 | |
| JY43 | L6 | 8/24/18 23:31 | 13C4-PFOS | 32,619.41 | 16,124.01 | 48,372.03 | |
| JY44 | L7 | 8/24/18 23:42 | 13C4-PFOS | 28,605.63 | 16,124.01 | 48,372.03 | |
| JY46 IB | Instrument Blank | 8/24/18 23:53 | 13C4-PFOS | 30,847.94 | 16,124.01 | 48,372.03 | |
| JY45 ICC | ICC | 8/25/18 0:03 | 13C4-PFOS | 37,275.00 | 16,124.01 | 48,372.03 | |
| CR635PB-FS(3) | Procedural Blank | 8/25/18 1:09 | 13C4-PFOS | 28,851.79 | 16,124.01 | 48,372.03 | |
| CR636LCS-FS(3) | Laboratory Control Sample | 8/25/18 1:20 | 13C4-PFOS | 24,552.30 | 16,124.01 | 48,372.03 | |
| J7401-FS(3) | NASB-BLL15-GW-FB01-080918 | 8/25/18 1:30 | 13C4-PFOS | 26,359.53 | 16,124.01 | 48,372.03 | |
| JY41 CCV | CCV | 8/25/18 1:41 | 13C4-PFOS | 30,502.51 | 16,124.01 | 48,372.03 | |

BATTELLE

Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:22 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY44 | **Injection Vial** | 8 |
| **Sample ID** | L7 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 11:42:11 PM | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Spectra Acquisition Rate | Passing Range |
|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | 55 | >10 |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 51 | >10 |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 25 | >10 |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 26 | >10 |
| PFHpA_1 | 363.0 / 319.0 | 2.26 | 29 | >10 |
| PFHpA_2 | 363.0 / 169.0 | 2.26 | 30 | >10 |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | 48 | >10 |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | 46 | >10 |
| PFOA_1 | 413.0 / 369.0 | 2.66 | 49 | >10 |
| PFOA_2 | 413.0 / 169.0 | 2.66 | 36 | >10 |
| PFNA_1 | 463.0 / 419.0 | 3.05 | 33 | >10 |
| PFNA_2 | 463.0 / 219.0 | 3.05 | 31 | >10 |
| PFOS_1 | 499.0 / 80.0 | 3.04 | 31 | >10 |
| PFOS_2 | 499.0 / 99.0 | 3.04 | 52 | >10 |
| PFDA_1 | 513.0 / 469.0 | 3.40 | 46 | >10 |
| PFDA_2 | 513.0 / 219.0 | 3.40 | 39 | >10 |
| PFUnA_1 | 563.0 / 519.0 | 3.72 | 30 | >10 |
| PFUnA_2 | 563.0 / 269.0 | 3.72 | 57 | >10 |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | 32 | >10 |
| PFDoA_2 | 613.0 / 319.0 | 4.00 | 38 | >10 |
| PFTrDA_1 | 663.0 / 619.0 | 4.25 | 64 | >10 |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | 37 | >10 |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | 86 | >10 |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | 49 | >10 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.55 | 48 | >10 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.55 | 34 | >10 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.72 | 36 | >10 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.72 | 25 | >10 |
| PFBA | 213.0 / 169.0 | 1.16 | 45 | >10 |

BATTELLE

Mass Spectral Acquisition Rate Report

Created with Analyst Reporter
Printed: 29/08/2018 2:09:34 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY44 | **Injection Vial** | 8 |
| **Sample ID** | L7 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 11:42:11 PM | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Spectra Acquisition Rate | Passing Range |
|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.16 | 44 | >10 |
| 13C2-PFDoA | 615.0 / 570.0 | 3.99 | 41 | >10 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.55 | 35 | >10 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.71 | 23 | >10 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 37 | >10 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 37 | >10 |
| 13C8-PFOA | 421.0 / 376.0 | 2.65 | 34 | >10 |
| 13C9-PFNA | 472.0 / 427.0 | 3.03 | 35 | >10 |
| 13C6-PFDA | 519.0 / 474.0 | 3.38 | 33 | >10 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.71 | 37 | >10 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.46 | 42 | >10 |
| 13C3-PFBS | 302.0 / 99.0 | 1.53 | 33 | >10 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.27 | 33 | >10 |
| 13C8-PFOS | 507.0 / 99.0 | 3.03 | 25 | >10 |

BATTELLE
It can be done

Precision and Bias at the LOQ for PFAS in non-potable Water

| Analyte | CAS No. | Average (ng/L) | ST DEV | 3 Sigma | n |
|---|---|---|---|---|---|
| PFBA | 375-22-4 | 12.40 | 2.18 | 6.54 | 11 |
| PFPeA | 2706-90-3 | 10.73 | 1.51 | 4.53 | 9 |
| PFHxA | 307-24-4 | 10.07 | 1.25 | 3.75 | 30 |
| PFHpA | 375-85-9 | 9.51 | 1.71 | 5.13 | 30 |
| PFOA | 335-67-1 | 10.06 | 1.60 | 4.80 | 31 |
| PFNA | 375-95-1 | 9.70 | 1.23 | 3.69 | 30 |
| PFDA | 335-76-2 | 10.04 | 1.43 | 4.29 | 30 |
| PFUnA | 2058-94-8 | 9.95 | 1.45 | 4.35 | 30 |
| PFDoA | 307-55-1 | 11.03 | 1.28 | 3.84 | 30 |
| PFTrDA | 72629-94-8 | 11.52 | 1.50 | 4.50 | 30 |
| PFTeDA | 376-06-7 | 10.92 | 2.07 | 6.21 | 30 |
| NMeFOSAA | 2355-31-9 | 10.21 | 2.04 | 6.12 | 30 |
| NEtFOSAA | 2991-50-6 | 9.60 | 1.70 | 5.10 | 30 |
| PFOSA | 754-91-6 | 9.74 | 1.14 | 3.42 | 3 |
| PFBS | 375-73-5 | 10.25 | 1.55 | 4.65 | 31 |
| PFPeS | BDO-2114 | 9.80 | 0.96 | 2.88 | 4 |
| PFHxS | 355-46-4 | 9.90 | 1.52 | 4.56 | 30 |
| PFHpS | 375-99-6 | 10.96 | 0.96 | 2.88 | 9 |
| PFOS | 1763-23-1 | 10.16 | 1.47 | 4.41 | 30 |
| PFNS | 98789-57-2 | 9.34 | 1.10 | 3.30 | 4 |
| PFDS | 2806-15-7 | 10.13 | 1.88 | 5.64 | 9 |
| 4:2FTS | BDO-2205 | 11.03 | 1.26 | 3.78 | 9 |
| 6:2FTS | 27619-97-2 | 12.52 | 2.91 | 8.73 | 9 |
| 8:2FTS | 39108-34-4 | 12.11 | 2.54 | 7.62 | 9 |

# BATTELLE DETECTION LIMITS FOR PFAS IN NON-POTABLE WATER

Analytical SOP 5-369
Extraction SOP 5-370

PFAS by LC-MS/MS Compliant with QSM 5.1 Compliant Table B-15

| Analyte | CAS No. | MDL (ng/L) | LOD (ng/L) | LOQ (ng/L) |
|---|---|---|---|---|
| ***PFBA*** | 375-22-4 | 0.14 | 0.5 | 5.0 |
| ***PFPeA*** | 2706-90-3 | 0.31 | 1.0 | 5.0 |
| ***PFHxA*** | 307-24-4 | 0.19 | 0.5 | 5.0 |
| ***PFHpA*** | 375-85-9 | 0.16 | 0.5 | 5.0 |
| ***PFOA*** | 335-67-1 | 0.18 | 0.5 | 5.0 |
| ***PFNA*** | 375-95-1 | 0.26 | 1.0 | 5.0 |
| ***PFDA*** | 335-76-2 | 0.16 | 0.5 | 5.0 |
| ***PFUnA*** | 2058-94-8 | 0.29 | 1.0 | 5.0 |
| ***PFDoA*** | 307-55-1 | 0.18 | 0.5 | 5.0 |
| ***PFTrDA*** | 72629-94-8 | 0.15 | 0.5 | 5.0 |
| ***PFTeDA*** | 376-06-7 | 0.25 | 1.0 | 5.0 |
| ***NMeFOSAA*** | 2355-31-9 | 0.56 | 2.0 | 5.0 |
| ***NEtFOSAA*** | 2991-50-6 | 0.49 | 1.0 | 5.0 |
| PFOSA | 754-91-6 | TBD | TBD | TBD |
| ***PFBS*** | 375-73-5 | 0.13 | 0.5 | 5.0 |
| PFPeS | BDO-2114 | 0.67 | 2.5 | 5.0 |
| ***PFHxS*** | 355-46-4 | 0.11 | 0.4 | 5.0 |
| ***PFHpS*** | 375-99-6 | 0.20 | 0.5 | 5.0 |
| ***PFOS*** | 1763-23-1 | 0.19 | 0.5 | 5.0 |
| PFNS | 98789-57-2 | 0.46 | 1.0 | 5.0 |
| ***PFDS*** | 2806-15-7 | 0.17 | 0.5 | 5.0 |
| ***4:2FTS*** | BDO-2205 | 0.14 | 0.5 | 5.0 |
| ***6:2FTS*** | 27619-97-2 | 1.36 | 2.5 | 5.0 |
| ***8:2FTS*** | 39108-34-4 | 0.22 | 0.5 | 5.0 |

***Analytes on NELAP and ELAP QSM 5.1 Scope of accreditation***



Battelle and its logos are registered trademarks of Battelle Memorial Institute. © Battelle Memorial Institute 2018. All Rights Reserved.

ID 596 04/18

Analytical Transitions for PFAS in non-potable water, solid, and tissue

EPA 537 MOD DoD QSM 5.1 compliant with Table B-15 requirements

| Analyte | CAS No. | Type | Primary Transition | Secondary Transition |
|---|---|---|---|---|
| PFBA | 375-22-4 | Target | 213.0 / 169.0 | NA |
| PFPeA | 2706-90-3 | Target | 263.0 / 219.0 | NA |
| PFHxA | 307-24-4 | Target | 313.0 / 269.0 | 313.0 / 119.0 |
| PFHpA | 375-85-9 | Target | 363.0 / 319.0 | 363.0 / 169.0 |
| PFOA | 335-67-1 | Target | 413.0 / 369.0 | 413.0 / 169.0 |
| PFNA | 375-95-1 | Target | 463.0 / 419.0 | 463.0 / 219.0 |
| PFDA | 335-76-2 | Target | 513.0 / 469.0 | 513.0 / 219.0 |
| PFUnA | 2058-94-8 | Target | 563.0 / 519.0 | 563.0 / 269.0 |
| PFDoA | 307-55-1 | Target | 613.0 / 569.0 | 613.0 / 319.0 |
| PFTrDA | 72629-94-8 | Target | 663.0 / 619.0 | 663.0 / 169.0 |
| PFTeDA | 376-06-7 | Target | 713.0 / 669.0 | 713.0 / 169.0 |
| NMeFOSAA | 2355-31-9 | Target | 570.0 / 419.0 | 570.0 / 512.0 |
| NEtFOSAA | 2991-50-6 | Target | 584.0 / 419.0 | 584.0 / 483.0 |
| PFOSA | 754-91-6 | Target | 498.0 / 78.0 | 498.0 / 83.0 |
| PFBS | 375-73-5 | Target | 299.0 / 80.0 | 299.0 / 99.0 |
| PFPeS | BDO-2114 | Target | 349.0 / 99.0 | 249.0 / 80.0 |
| PFHxS | 355-46-4 | Target | 399.0 / 80.0 | 399.0 / 99.0 |
| PFHpS | 375-99-6 | Target | 449.0 / 80.0 | 449.0 / 99.0 |
| PFOS | 1763-23-1 | Target | 499.0 / 80.0 | 499.0 / 99.0 |
| PFNS | 98789-57-2 | Target | 549.0 / 99.0 | 549.0 / 80.0 |
| PFDS | 2806-15-7 | Target | 599.0 / 80.0 | 599.0 / 99.0 |
| 4:2FTS | BDO-2205 | Target | 327.0 / 307.0 | 327.0 / 80.0 |
| 6:2FTS | 27619-97-2 | Target | 427.0 / 407.0 | 427.0 / 81.0 |
| 8:2FTS | 39108-34-4 | Target | 527.0 / 507.0 | 527.0 / 487.0 |
| 13C4-PFBA | BDO-2105 | SIS[1] | 217.0 / 172.0 | NA |
| 13C5-PFPeA | BDO-2216 | SIS[1] | 268.0 / 223.0 | NA |
| 13C5-PFHxA | BDO-2217 | SIS[1] | 318.0 / 273.0 | NA |

| Analyte | CAS No. | Type | Primary Transition | Secondary Transition |
|---|---|---|---|---|
| 13C4-PFHpA | BDO-2218 | SIS[1] | 367.0 / 322.0 | NA |
| 13C8-PFOA | BDO-2219 | SIS[1] | 421.0 / 376.0 | NA |
| 13C9-PFNA | BDO-2221 | SIS[1] | 472.0 / 427.0 | NA |
| 13C6-PFDA | BDO-2222 | SIS[1] | 519.0 / 474.0 | NA |
| 13C7-PFUnA | BDO-2223 | SIS[1] | 570.0 / 525.0 | NA |
| 13C2-PFDoA | BDO-2112 | SIS[1] | 615.0 / 570.0 | NA |
| 13C2-PFTeDA | BDO-2224 | SIS[1] | 715.0 / 670.0 | NA |
| d3-MeFOSAA | BDO-1838 | SIS[1] | 573.0 / 419.0 | NA |
| d5-EtFOSAA | BDO-1839 | SIS[1] | 589.0 / 419.0 | NA |
| 13C8-FOSA | BDO-2225 | SIS[1] | 506.0 / 78.0 | NA |
| 13C3-PFBS | BDO-2226 | SIS[1] | 302.0 / 99.0 | NA |
| 13C3-PFHxS | BDO-2227 | SIS[1] | 402.0 / 99.0 | NA |
| 13C8-PFOS | BDO-2228 | SIS[1] | 507.0 / 99.0 | NA |
| 13C2-4:2FTS | BDO-2229 | SIS[1] | 329.0 / 81.0 | NA |
| 13C2-6:2FTS | BDO-2230 | SIS[1] | 429.0 / 81.0 | NA |
| 13C2-8:2FTS | BDO-2220 | SIS[1] | 529.0 / 81.0 | NA |
| 13C3-PFBA | BDO-2231 | IS[2] | 216.0 / 172.0 | NA |
| 13C2-PFOA | BDO-2107 | IS[2] | 415.0 / 370.0 | NA |
| 13C2-PFDA | BDO-2110 | IS[2] | 515.0 / 470.0 | NA |
| 13C4-PFOS | BDO-2121 | IS[2] | 503.0 / 99.0 | NA |

[1] – extracted internal standard (surrogate)
[2] – injection internal standard

BATTELLE

Non-Potable Water Calibration to Sample Equivalents

| ICAL (ng/L) | PIV (mL) | DF[1] | Sample Size (L) | Sample Equivalent (ng/L)[2] |
|---|---|---|---|---|
| 25 | 0.5 | 2 | 0.250 | 0.1 |
| 50 | 0.5 | 2 | 0.250 | 0.2 |
| 100 | 0.5 | 2 | 0.250 | 0.4 |
| 250 | 0.5 | 2 | 0.250 | 1.0 |
| 500 | 0.5 | 2 | 0.250 | 2.0 |
| 1,000 | 0.5 | 2 | 0.250 | 4.0 |
| 2,500 | 0.5 | 2 | 0.250 | 10.0 |
| 10,000 | 0.5 | 2 | 0.250 | 40.0 |
| 20,000 | 0.5 | 2 | 0.250 | 80.0 |

[1] - base level dilution as part of the extraction procedure

[2] - calculated equivalent of a sample based on the ICAL concentration

**Zef Scientific Inc.**

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

# QTRAP 5500

**LC/MS/MS Detector System**

Appendix ZEFPM003-2L

Mass Calibration and Tune Check

# QTRAP 5500
# Preventive Maintenance Checklist

| | |
|---|---|
| **Preventive Maintenance Date:** | 12-June-2018 |

| | |
|---|---|
| **Request ID:** | 9749 |
| **Company Name:** | Battelle Memorial Institute |
| **Instrument ID:** | X60666 |
| **Instrument Model:** | QTRAP 5500 |
| **Instrument Serial Number:** | AU23051004 |

☑ **PASS** ☐ **FAIL**

**Any failure will lead to an automatic Service Call being open to investigate fault.**

Preventive Maintenance is performed twice every year unless specified in the Service Contract. It is designed to help maintain optimum system performance and to help diagnose any system deficiencies.

Engineer is required the assigned Request ID for this PM otherwise making this job invalid.

**Comments:** Suspected issue with pulse gas manifold. TRAP testing in POSITIVE mode couldn't be finished because of pulse gas issue. The same issue will be taken care in separate service call.

**Performed By:** Kaustubh Dhayagude **Date:** 12-June-2018

**Approved By** :_____ **Date:** _____

© This document is the property of Zef Scientific and intended for Zef Scientific Inc trained engineers use only. No copying, all or partial, is permitted without prior authorization.

**Zef Scientific Inc.**

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

# QTRAP 5500

**LC/MS/MS Detector System**

Appendix ZEFPM003-2L

## PRE PM PPG PERFORMANCE EVALUATION:

☑ Consult Customer concerning the unit overall performance.
☑ Check Logbook for Services recently performed.
☑ Check Vacuum Pressure:

| CAD Settings | Vacuum Reading ( x $10^{-5}$ Torr) | Acceptance Criteria |
|---|---|---|
| ☑ CAD 0 | 0.6 | 0.4 to 1.1 x$10^{-5}$ Torr |
| ☑ CAD Low | 1.3 | Read Only |
| ☑ CAD Medium | 2.7 | Read Only |
| ☑ CAD High | 3.7 | Read Only |
| ☑ CAD 12 | 3.7 | 2.4 to 4.5 x$10^{-5}$ Torr |

☑ Check for Front end contamination symptoms. Run Q1 POS PPG using PPG 2e-7for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification

☑ No degradation or Sensitivity drop

☑ Check for Q3 contamination symptoms. Run Q3 POS PPG using PPG 2e-7for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification

☑ No degradation or Sensitivity drop

**Pre PM PPG Test:** Perform each of the following tests. Optimize ion source position only. The specifications listed for these Pre PM tests are guidelines only, not required to be met.

☑ Perform Q1 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

| Mass | Q1 Intensity | | Q1 Width Value | Width Specs |
|---|---|---|---|---|
| | Value | Spec | | |
| Q1 175.133 | 4.01 e6 | Read Only | 0.6998 | Read Only |
| Q1 500.380 | 2.81 e7 | Read Only | 0.7038 | Read Only |
| Q1 906.673 | 4.21 e7 | Read Only | 0.7071 | Read Only |

☑ Perform Q3 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

| Mass | Q3 Intensity | | Q3 Width Value | Width Specs |
|---|---|---|---|---|
| | Value | Spec | | |
| Q3 175.133 | 5.45 e6 | Read Only | 0.6873 | Read Only |
| Q3 500.380 | 2.69 e7 | Read Only | 0.7591 | Read Only |
| Q3 906.673 | 4.50 e7 | Read Only | 0.7843 | Read Only |

© This document is the property of Zef Scientific and intended for Zef Scientific Inc trained engineers use only. No copying, all or partial, is permitted without prior authorization.

**Zef Scientific Inc.**

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

# QTRAP 5500

**LC/MS/MS Detector System**

Appendix ZEFPM003-2L

☐ Perform MSMS POS in Product Ion scan with 609.3 parent and record daughter 195.1 using Reserpine 0.167 pmol/ul at the scan rate of 10 Da/s for 10 MCA. Calculate transmission efficiency comparing Q1POS 609 intensity. Transmission Efficiency: :__28.87%__ (Read Only)

| Mass | MSMS Intensity | | MSMS Width Value | Width Specs |
|---|---|---|---|---|
| | Value | Spec | | |
| Q1 609.3 | 4.26 e7 | Read Only | 0.7011 | Read Only |
| MS/MS 195.1 | 1.23 e7 | Read Only | 0.7069 | Read Only |

☑ Perform Q1 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

| Mass | Q1 Intensity | | Q1 Width Value | Width Specs |
|---|---|---|---|---|
| | Value | Spec | | |
| Q1 933.636 | 1.42 e7 | Read Only | 0.7686 | Read Only |

☑ Perform Q3 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

| Mass | Q3 Intensity | | Q3 Width Value | Width Specs |
|---|---|---|---|---|
| | Value | Spec | | |
| Q3 933.636 | 2.24 e7 | Read Only | 0.7243 | Read Only |

☑ Perform Product Ion scan using NEG PPG 3e-5M. Record10mca.

| Mass | Scan Rate | MCA | MSMS Intensity | | MSMS Width Value | Width Specs |
|---|---|---|---|---|---|---|
| | | | Value | Spec | | |
| MSMS 45 | 10 | 10 | 3.31 e6 | Read Only | 0.6746 | Read Only |

© This document is the property of Zef Scientific and intended for Zef Scientific Inc trained engineers use only. No copying, all or partial, is permitted without prior authorization.

**Zef Scientific Inc.**

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

# QTRAP 5500

**LC/MS/MS Detector System**

Appendix ZEFPM003-2L

## PREVENTIVE MAINTENANCE CHECKLIST:

☑ Check Cooling Fans for Turbo Pumps while MS is ON.
☑ Check QJet and QPS tuning voltage for reference.
☐ Record AC input Voltage while MS is OFF: _____(200-240VAC).
If Out-of-Range, notify customer.

☑ Clean Interface
- ☑ Curtain Plate
- ☑ Orifice Plate
- ☑ QJet
- ☑ Q0 Rods.

☑ Replace Roughing Pump Oil.
☑ Inspect Oil Exhaust Filter, if Applicable. ☐ N/A
☑ Clean and inspect built-in divert valve if used. ☐ N/A
☑ Check Multiplier Voltage, optimize if necessary.
☑ Replace four Air Filters at the bottom of the mass spectrometer.

☑Pump down overnight if possible. ☐ N/A

☑Perform Maintenance on Turbo V source.

☑Replace Electrode, if necessary. ☐ N/A
☑Check Turbo heaters resistances.
☑Check if Temperature is reached at 500C with TIS Probe installed.
☐Check if Temperature is reached at 500C with APCI Probe installed. ☑ N/A

© This document is the property of Zef Scientific and intended for Zef Scientific Inc trained engineers use only. No copying, all or partial, is permitted without prior authorization.

**Zef Scientific Inc.**

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

# QTRAP 5500

**LC/MS/MS Detector System**

Appendix ZEFPM003-2L

## POST PM PPG PERFORMANCE TESTS:

☑ Set-up Sample for Infusion.
☑ Check spray and adjust sprayer's position of the TIS source.
☑ Check Vacuum Pressure:

| CAD Settings | Vacuum Reading ( x $10^{-5}$ Torr) | Acceptance Criteria |
|---|---|---|
| ☑ CAD 0 | 0.7 | 0.4 to 1.1 x$10^{-5}$ Torr |
| ☑ CAD Low | 1.3 | Read Only |
| ☑ CAD Medium | 2.7 | Read Only |
| ☑ CAD High | 3.7 | Read Only |
| ☑ CAD 12 | 3.7 | 2.4 to 4.5 x$10^{-5}$ Torr |

☑ Perform Q1 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

| Mass | Q1 Intensity | | Q1 Width | Width Specs |
|---|---|---|---|---|
| | Value | Spec | Value | |
| Scan Rate 10 Da/s Record 10 mca | | | | |
| Q1 175.133 | 5.04 e6 | ≥1.2$^{e}$6 | 0.6737 | 0.6 to 0.8 |
| Q1 500.380 | 1.60 e7 | ≥9.0$^{e}$6 | 0.6961 | 0.6 to 0.8 |
| Q1 906.673 | 2.84 e7 | ≥1.4$^{e}$7 | 0.7179 | 0.6 to 0.8 |
| Scan Rate 1000 Da/s Record 50 mca | | | | |
| Q1 906.673 | 1.33 e8 | ≥6.8$^{e}$7 | 0.7465 | 0.6 to 0.8 |

☑ Perform Q3 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

| Mass | Q3 Intensity | | Q3 Width | Width Specs |
|---|---|---|---|---|
| | Value | Spec | Value | |
| Scan Rate 10 Da/s Record 10 mca | | | | |
| Q3 175.133 | 5.02 e6 | ≥1.2$^{e}$6 | 0.6719 | 0.6 to 0.8 |
| Q3 500.380 | 1.72 e7 | ≥9.0$^{e}$6 | 0.7443 | 0.6 to 0.8 |
| Q3 906.673 | 3.00 e7 | ≥1.4$^{e}$7 | 0.7504 | 0.6 to 0.8 |
| Scan Rate 1000 Da/s Record 50 mca | | | | |
| Q3 906.673 | 1.46 e8 | ≥6.8$^{e}$7 | 0.7202 | 0.6 to 0.8 |

☑ Perform "Product of 609.3" POS and record product ion 195.1 using Reserpine 0.167pmol/uL. Record 10 mca. Calculate Transmission efficiency comparing Q1POS 609 intensity.
Transmission Efficiency: 21.10% (≥ 10.0%)

| Mass | MSMS Intensity | | Width | Width Specs |
|---|---|---|---|---|
| | Value | Spec | Value | |
| Q1 609.3 | 5.78 e7 | N/A | 0.6888 | Read Only |
| MS/MS 195.1 | 1.22 e7 | N/A | 0.7003 | Read Only |

© This document is the property of Zef Scientific and intended for Zef Scientific Inc trained engineers use only. No copying, all or partial, is permitted without prior authorization.

**Zef Scientific Inc.**

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

# QTRAP 5500

**LC/MS/MS Detector System**

Appendix ZEFPM003-2L

☑ Perform Q1 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

| Mass | Scan Rate | Mca | Q1 Intensity | | Q1 Width Value | Width Specs |
|---|---|---|---|---|---|---|
| | | | Value | Spec | | |
| Q1 933.636 | 10 | 10 | 1.35 e7 | ≥1.0$^{e}$7 | 0.7486 | 0.6 to 0.8 |
| Q1 933.636 | 1000 | 50 | 7.52 e7 | ≥4.0$^{e}$7 | 0.7206 | 0.6 to 0.8 |

☑ Perform Q3 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

| Mass | Scan Rate | Mca | Q3 Intensity | | Q3 Width Value | Width Specs |
|---|---|---|---|---|---|---|
| | | | Value | Spec | | |
| Q3 933.636 | 10 | 10 | 2.15 e7 | ≥8.0$^{e}$6 | 0.7492 | 0.6 to 0.8 |
| Q3 933.636 | 1000 | 50 | 8.33 e7 | ≥4.0$^{e}$7 | 0.7299 | 0.6 to 0.8 |

☑ Perform Product Ion scan using NEG PPG 3e-5M.

| Mass | Scan Rate | Mca | MSMS Intensity | | MSMS Width Value | Width Specs |
|---|---|---|---|---|---|---|
| | | | Value | Spec | | |
| MSMS 45 | 10 | 10 | 3.33 e6 | Read Only | 0.6387 | Read Only |

☑ Perform ER POS 118.087 and 922.01 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

| Mass | Fill Time (ms) | ER Intensity | | ER Width Value | Width Specs |
|---|---|---|---|---|---|
| | | Value | Spec | | |
| ScanRate : 1000 Da/s ; 50 Mca | | | | | |
| ER 118.087 | 0.05 | 8.54 e6 | ≥7.2 $^{e}$6 | 0.1473 | <0.35 |
| ER 922.010 | 0.05 | 4.96 e7 | ≥2.8 $^{e}$6 | 0.2434 | <0.35 |
| ScanRate : 10000 Da/s ; 50 Mca | | | | | |
| ER 118.087 | 0.05 | | ≥2.4 $^{e}$7 | | <0.65 |
| ER 922.010 | 0.05 | | ≥6.8 $^{e}$7 | | <0.65 |

☑ Perform ER NEG 431.982 and 601.978 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

| Mass | Fill Time (ms) | ER Intensity | | ER Width Value | Width Specs |
|---|---|---|---|---|---|
| | | Value | Spec | | |
| ScanRate : 1000 Da/s ; 50 Mca | | | | | |
| ER 431.982 | 0.05 | 1.81 e8 | ≥4.4 $^{e}$7 | 0.1862 | <0.35 |
| ER 601.978 | 0.05 | 1.70 e8 | ≥5.6 $^{e}$7 | 0.1809 | <0.35 |
| ScanRate : 10000 Da/s ; 50 Mca | | | | | |
| ER 431.982 | 0.05 | 5.72 e8 | ≥1.2 $^{e}$8 | 0.5102 | <0.65 |
| ER 601.978 | 0.05 | 4.52 e8 | ≥1.6 $^{e}$8 | 0.6187 | <0.65 |

© This document is the property of Zef Scientific and intended for Zef Scientific Inc trained engineers use only. No copying, all or partial, is permitted without prior authorization.

**Zef Scientific Inc.**

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

# QTRAP 5500

**LC/MS/MS Detector System**

Appendix ZEFPM003-2L

☑ Perform EPI POS 397.2 using Reserpine 0.167pmol/uL. Record 20 mca.

| Mass | Scan Rate (Da/s) | Q0 Trapping OFF | | Q0 Trapping ON | |
|---|---|---|---|---|---|
| | | Intensity | Spec | Intensity | Spec |
| EPI 397.2 | 10000 | > 3.0 e6 | ≥2.0 e6 | > 7.0 e6 | ≥6.4 e6 |

☑ Perform MS3 POS full scan Fragmentation ON & OFF using Reserpine 0.167pmol/uL. Record 20 mca.

| Mass | Scan Rate (Da/s) | Fragamentation OFF | | Fragmentation ON | |
|---|---|---|---|---|---|
| | | Intensity | Spec | Intensity | Spec |
| MS3 397.2 | 1000 | Yes | Contains only 397.2 | N/A | N/A |
| ☐ 236 OR ☑ 365 | 1000 | Yes | Fragment Intensity | > 2.0 e6 | ≥1.6x $10^{e}6$ |

## REVIEW:

☑ Attach all spectrums printouts to this procedure.
☑ If any parameter setting access modes were changed during the PM, ensure they are returned to their normal access mode and that their offsets are adjusted to match optimized values from the post-PM acquisition files.
☐ Empty tuning cache folder, if necessary. ☑ N/A
☑ Update Service Work Order status
☑ Fill and replace PM Label.

**END OF PREVENTIVE MAINTENANCE CHECKLIST**

## Document history:

06 OCT 2016: Appendix ZEFPM003-2L: Removed requirements to fit Manufacturer's testing criteria.

© This document is the property of Zef Scientific and intended for Zef Scientific Inc trained engineers use only. No copying, all or partial, is permitted without prior authorization.

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## SAMPLE PREPARATION RECORDS

| Project Title(s) | Project No.(s) |
|---|---|
| CTO-WE21: Former Naval Air Station, Brunswick, Maine | 100122108-CTOWE21 |

**18-0520**

**CTO-WE21: Former Naval Air Station, Brunswick, Maine**

**QC**

SOP Numbers (see workplan for modifications)

ExtractionSOP No. 5-370

| This Batch Contains The Following Samples: |
|---|
| CR635PB-FS |
| CR636LCS-FS |
| J7401-FS |

Laboratory Preparation Records

COMPLETE AND VALIDATED

Prep Task Leader: Stephanie Schultz

| Approved By: | Date | Initials |
|---|---|---|
| Denise Schumitz | 08/29/2018 | DMS |

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## LIQUID SAMPLE ID FORM

**Project Title(s)** | **Project No.(s)**

CTO-WE21: Former Naval Air Station, Brunswick, Maine | 100122108-CTOWE21

**18-0520**

**CTO-WE21: Former Naval Air Station, Brunswick, Maine**

**QC**

| Sample ID | Description | Volume (mL) | Bottles | * | Date Initials |
|---|---|---|---|---|---|
| CR635PB-FS | Procedural Blank | 250.0 | NA | -- | 08/22/18 SAS |
| CR636LCS-FS | Laboratory Control Sample | 250.0 | NA | -- | 08/22/18 SAS |
| J7401-FS | NASB-BLL15-GW-FB01-080918 | 265.0 | 1 | C | 08/22/18 SAS |

**Comments:**

Samples Assigned By Stephanie Schultz Date : August 22, 2018

* - "C" = Sample is Consumed

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## SURROGATE SPIKE FORM

**Project Title(s)**
CTO-WE21: Former Naval Air Station, Brunswick, Maine

**Project No.(s)**
100122108-CTOWE21

**18-0520**

**CTO-WE21: Former Naval Air Station, Brunswick, Maine**

**QC**

| Sample ID | Standard ID | Type | Vial No. | Vol Added (uL) | Date Spiked/ Spiked By | Witn'd By | Comment |
|---|---|---|---|---|---|---|---|
| CR635PB-FS | JY28 | SIS | 1 | 50 | 08/22/18 SAS | JCT | NA |
| CR636LCS-FS | JY28 | SIS | 1 | 50 | 08/22/18 SAS | JCT | NA |
| CR636LCS-FS | JZ27 | LCS/MS | 1 | 50 | 08/22/18 SAS | JCT | NA |
| J7401-FS | JY28 | SIS | 1 | 50 | 08/22/18 SAS | JCT | NA |

Syringes/Pipettes Used:

| Std ID | Type | Syr/Pip |
|---|---|---|
| JY28 | Pipette | B814659662 |
| JZ27 | Pipette | B814659662 |

BATTELLE
It can be done

# BATTELLE - NORWELL OPERATIONS
## INTERNAL STANDARD SPIKING FORM

**Project Title(s)**
CTO-WE21: Former Naval Air Station, Brunswick, Maine

**Project No.(s)**
100122108-CTOWE21

**18-0520**

**CTO-WE21: Former Naval Air Station, Brunswick, Maine**

**QC**

**(N/A Fraction)**

| Extract Id | Extr. Vol. (uL) | Added (uL) | Std. Id | Accm. (uL) | Vial No. | Pre Inj. Vol. (uL)^ | Final Dilution * | Date Spiked/ Spiked By | Witn'd By |
|---|---|---|---|---|---|---|---|---|---|
| CR635PB-FS(3) | 475 | 25 | JY26 | 25 | 1 | 500 | 2.000 | 08/23/18 SAS | MRM |
| CR636LCS-FS(3) | 475 | 25 | JY26 | 25 | 1 | 500 | 2.000 | 08/23/18 SAS | MRM |
| J7401-FS(3) | 475 | 25 | JY26 | 25 | 1 | 500 | 2.000 | 08/23/18 SAS | MRM |

Syringes/Pipettes Used:

| Std ID | Type | Syr/Pip |
|---|---|---|
| JY26 | Pipette | B814659662 |

* - Final Dilution is any HPLC, dilutions, or other manipulation

^ - Pre Injection Volume (PIV) includes any RIS spikes.

BATTELLE

Sequence Report

Created with Analyst Reporter
Printed: 29/08/2018 2:10:09 PM

| Vial | Laboratory Sample ID | Client Sample ID | Acquisition Date | Acquisition Method | Data File |
|---|---|---|---|---|---|
| 1 | MEOH | | 8/24/2018 10:26:02 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 2 | JY38 | L1 | 8/24/2018 10:36:54 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 3 | JY39 | L2 | 8/24/2018 10:47:47 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 4 | JY40 | L3 | 8/24/2018 10:58:41 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 5 | JY41 | L4 | 8/24/2018 11:09:34 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 6 | JY42 | L5 | 8/24/2018 11:20:26 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 7 | JY43 | L6 | 8/24/2018 11:31:18 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 8 | JY44 | L7 | 8/24/2018 11:42:11 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 9 | JY46 IB | Instrument Blank | 8/24/2018 11:53:03 PM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 10 | JY45 ICC | ICC | 8/25/2018 12:03:55 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 11 | JX29 BRANCH | Branch Standard | 8/25/2018 12:14:48 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 14 | MEOH | | 8/25/2018 12:58:20 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 15 | CR635PB-FS(3) | Procedural Blank | 8/25/2018 1:09:11 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 16 | CR636LCS-FS(3) | Laboratory Control Sample | 8/25/2018 1:20:03 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 17 | J7401-FS(3) | NASB-BLL15-GW-FB01-080918 | 8/25/2018 1:30:55 AM | 5-0369.dam | 18-0501-515-520-500.wiff |
| 18 | JY41 CCV | CCV | 8/25/2018 1:41:46 AM | 5-0369.dam | 18-0501-515-520-500.wiff |

BATTELLE

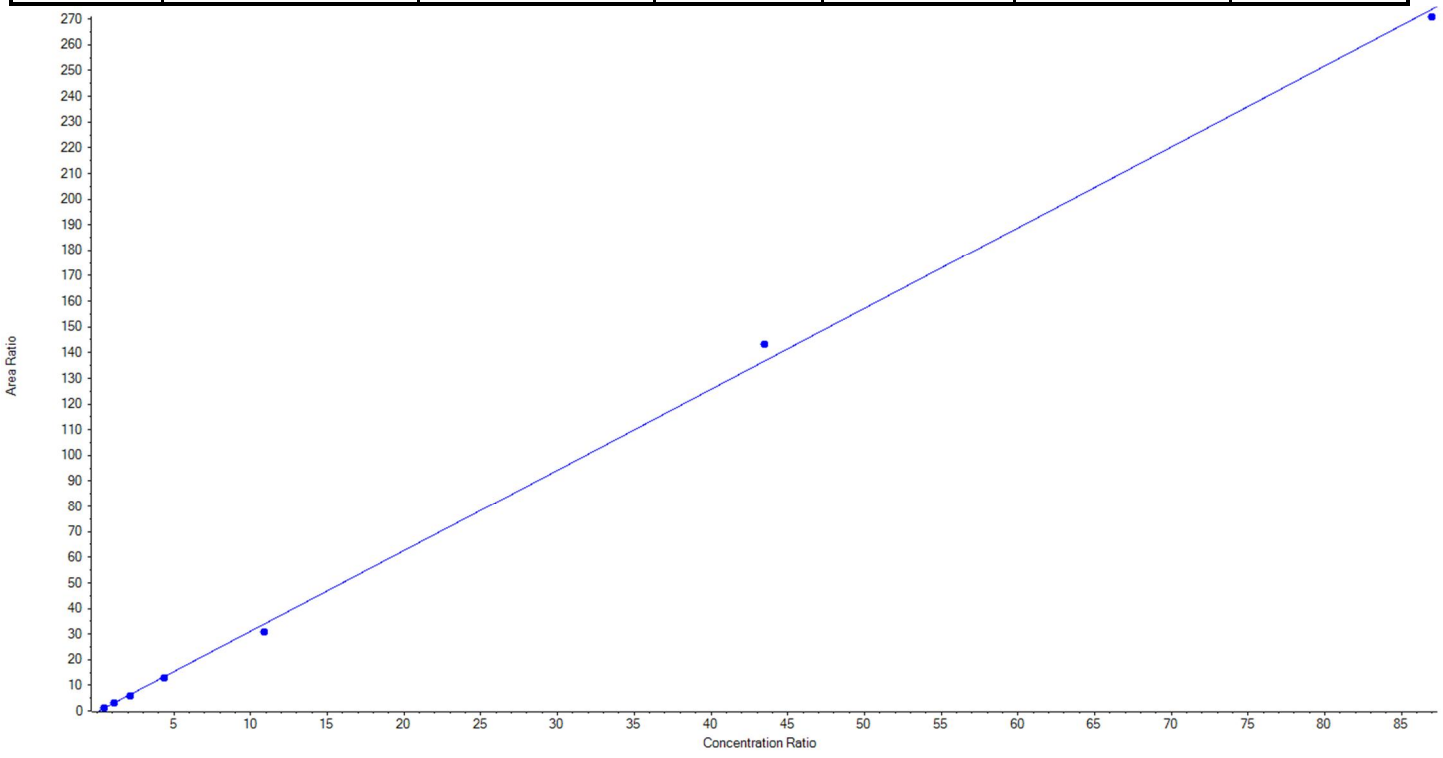
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFBS_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 298.9 / 80.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C3-PFBS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 3.15281 x + -0.41358 (r = 0.99916) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 101.00 | 118.174563 | 117.0 |
| 3 | JY39 | L2 | True | 252.50 | 254.441490 | 100.8 |
| 4 | JY40 | L3 | True | 505.00 | 456.707111 | 90.4 |
| 5 | JY41 | L4 | True | 1010.00 | 973.620829 | 96.4 |
| 6 | JY42 | L5 | True | 2525.00 | 2311.981236 | 91.6 |
| 7 | JY43 | L6 | True | 10100.00 | 10594.642449 | 104.9 |
| 8 | JY44 | L7 | True | 20200.00 | 19983.932322 | 98.9 |



BATTELLE

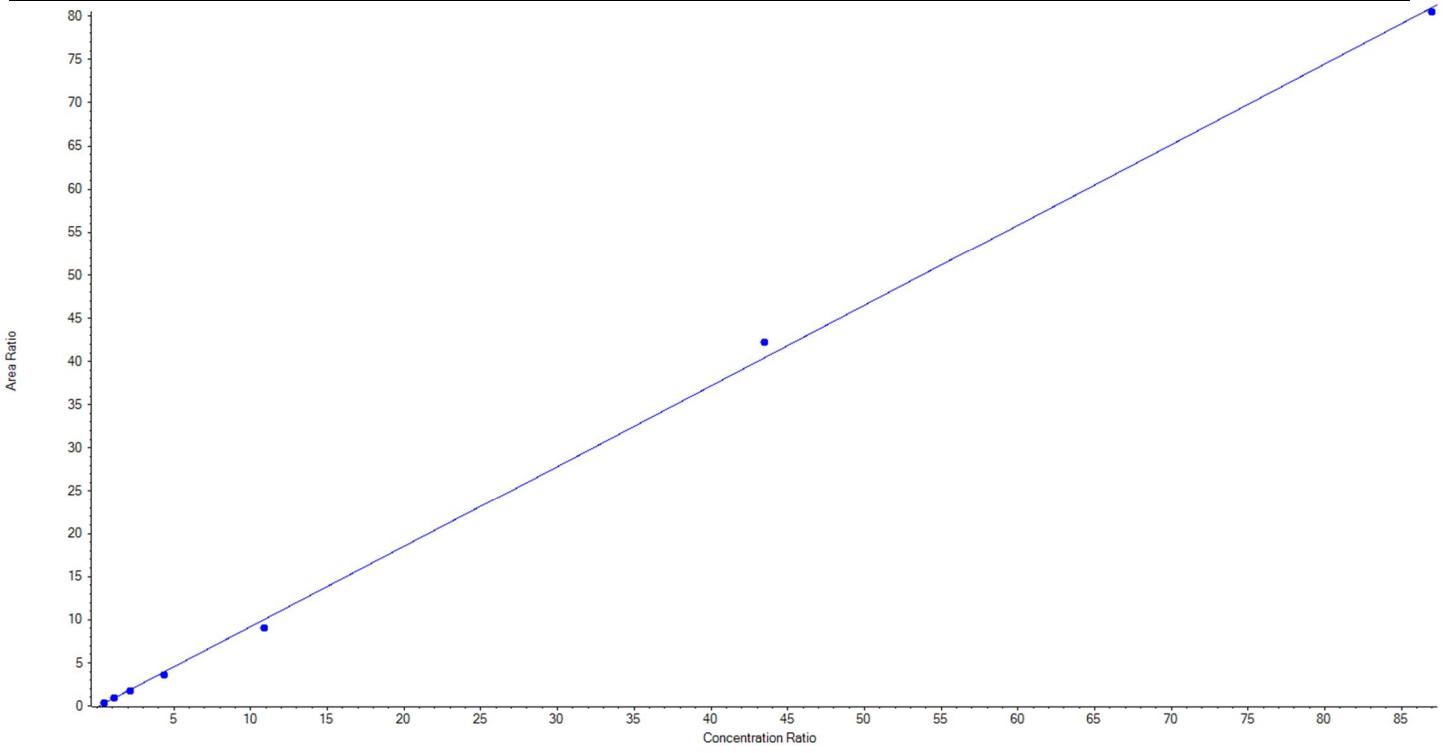
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFBS_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 298.9 / 99.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C3-PFBS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.93255 x + -0.12994 (r = 0.99907) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 101.00 | 124.006251 | 122.8 |
| 3 | JY39 | L2 | True | 252.50 | 251.390877 | 99.6 |
| 4 | JY40 | L3 | True | 505.00 | 457.925956 | 90.7 |
| 5 | JY41 | L4 | True | 1010.00 | 933.624261 | 92.4 |
| 6 | JY42 | L5 | True | 2525.00 | 2287.352093 | 90.6 |
| 7 | JY43 | L6 | True | 10100.00 | 10559.938920 | 104.6 |
| 8 | JY44 | L7 | True | 20200.00 | 20079.261643 | 99.4 |



BATTELLE

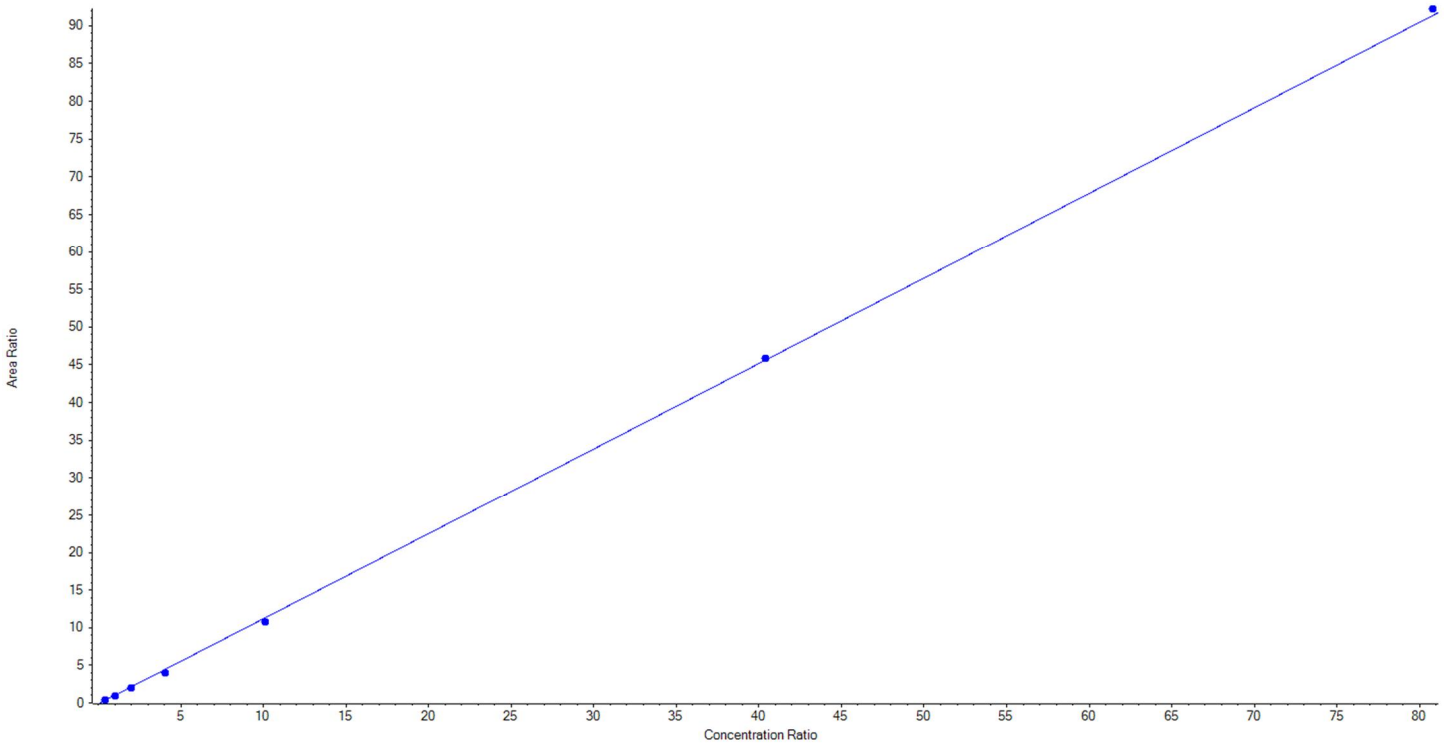
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHxA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 313.0 / 269.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C5-PFHxA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.13247 x + -0.13932 (r = 0.99960) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 101.00 | 125.508479 | 124.3 |
| 3 | JY39 | L2 | True | 252.50 | 243.109429 | 96.3 |
| 4 | JY40 | L3 | True | 505.00 | 464.496945 | 92.0 |
| 5 | JY41 | L4 | True | 1010.00 | 916.327219 | 90.7 |
| 6 | JY42 | L5 | True | 2525.00 | 2407.633843 | 95.4 |
| 7 | JY43 | L6 | True | 10100.00 | 10145.632957 | 100.5 |
| 8 | JY44 | L7 | True | 20200.00 | 20390.791129 | 100.9 |



BATTELLE

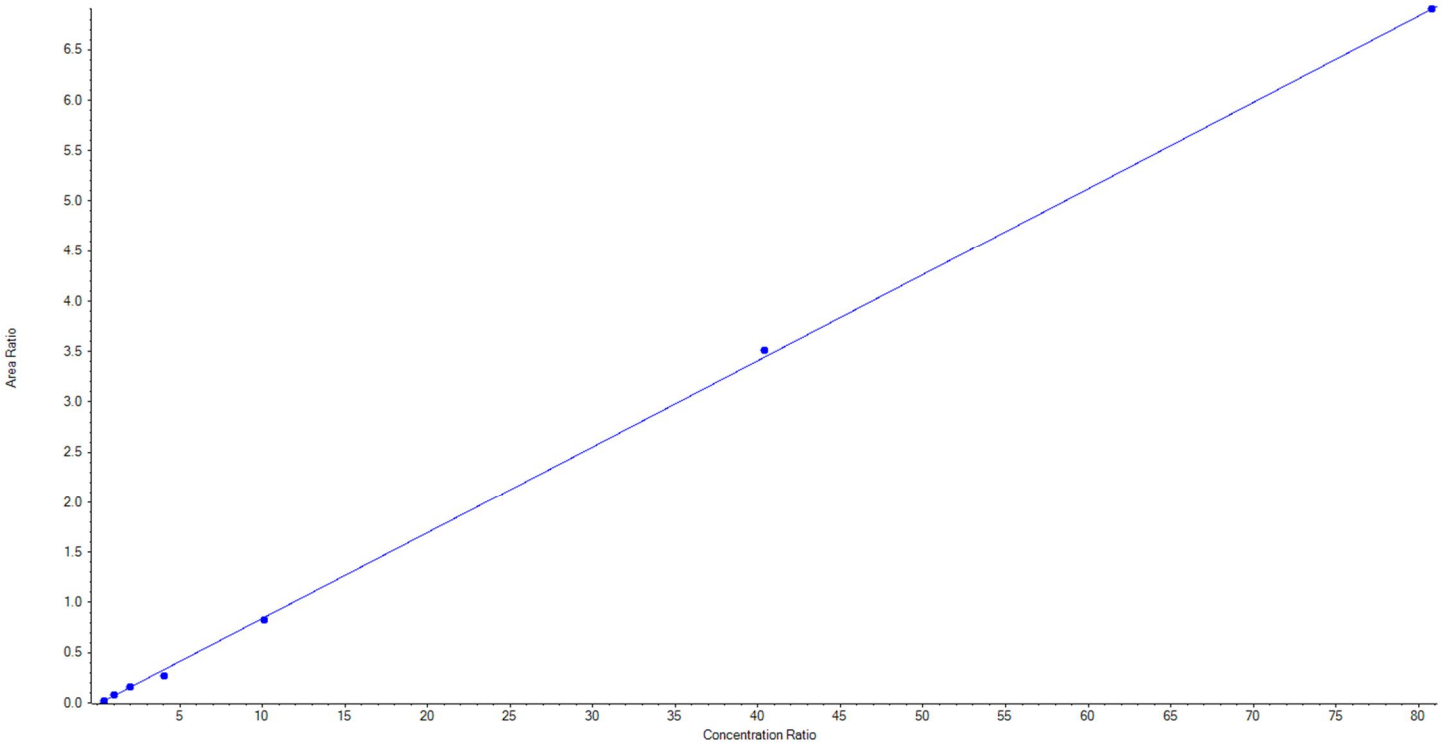
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHxA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 313.0 / 119.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C5-PFHxA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.08563 x + -0.01582 (r = 0.99943) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 101.00 | 109.463725 | 108.4 |
| 3 | JY39 | L2 | True | 252.50 | 269.034709 | 106.6 |
| 4 | JY40 | L3 | True | 505.00 | 518.403953 | 102.7 |
| 5 | JY41 | L4 | True | 1010.00 | 839.466188 | 83.1 |
| 6 | JY42 | L5 | True | 2525.00 | 2458.325809 | 97.4 |
| 7 | JY43 | L6 | True | 10100.00 | 10293.584410 | 101.9 |
| 8 | JY44 | L7 | True | 20200.00 | 20205.221206 | 100.0 |



BATTELLE

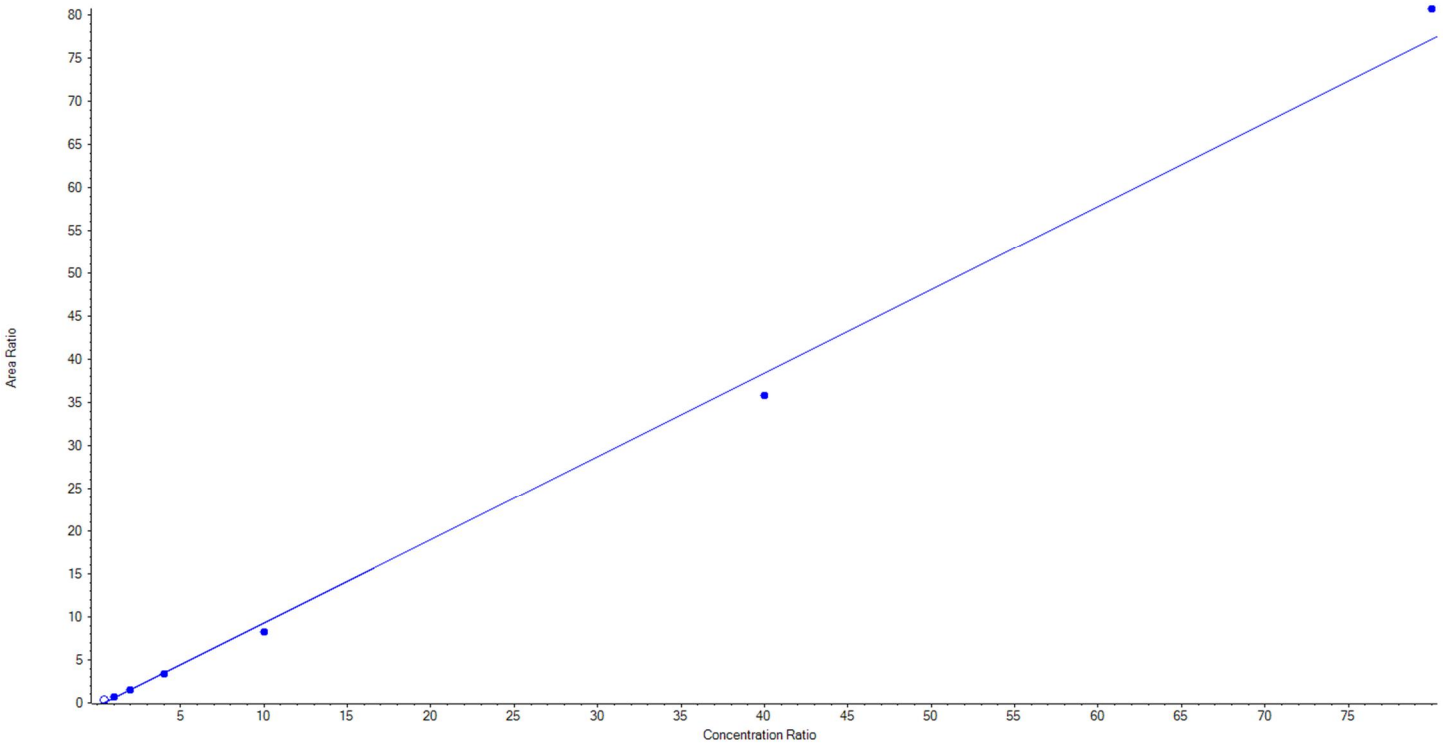
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHpA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 363.0 / 319.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C8-PFOA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.96991 x + -0.40464 (r = 0.99800) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | False | 100.00 | 182.558218 | 182.6 |
| 3 | JY39 | L2 | True | 250.00 | 289.794362 | 115.9 |
| 4 | JY40 | L3 | True | 500.00 | 491.393934 | 98.3 |
| 5 | JY41 | L4 | True | 1000.00 | 980.976708 | 98.1 |
| 6 | JY42 | L5 | True | 2500.00 | 2245.594351 | 89.8 |
| 7 | JY43 | L6 | True | 10000.00 | 9334.164109 | 93.3 |
| 8 | JY44 | L7 | True | 20000.00 | 20908.076537 | 104.5 |



BATTELLE

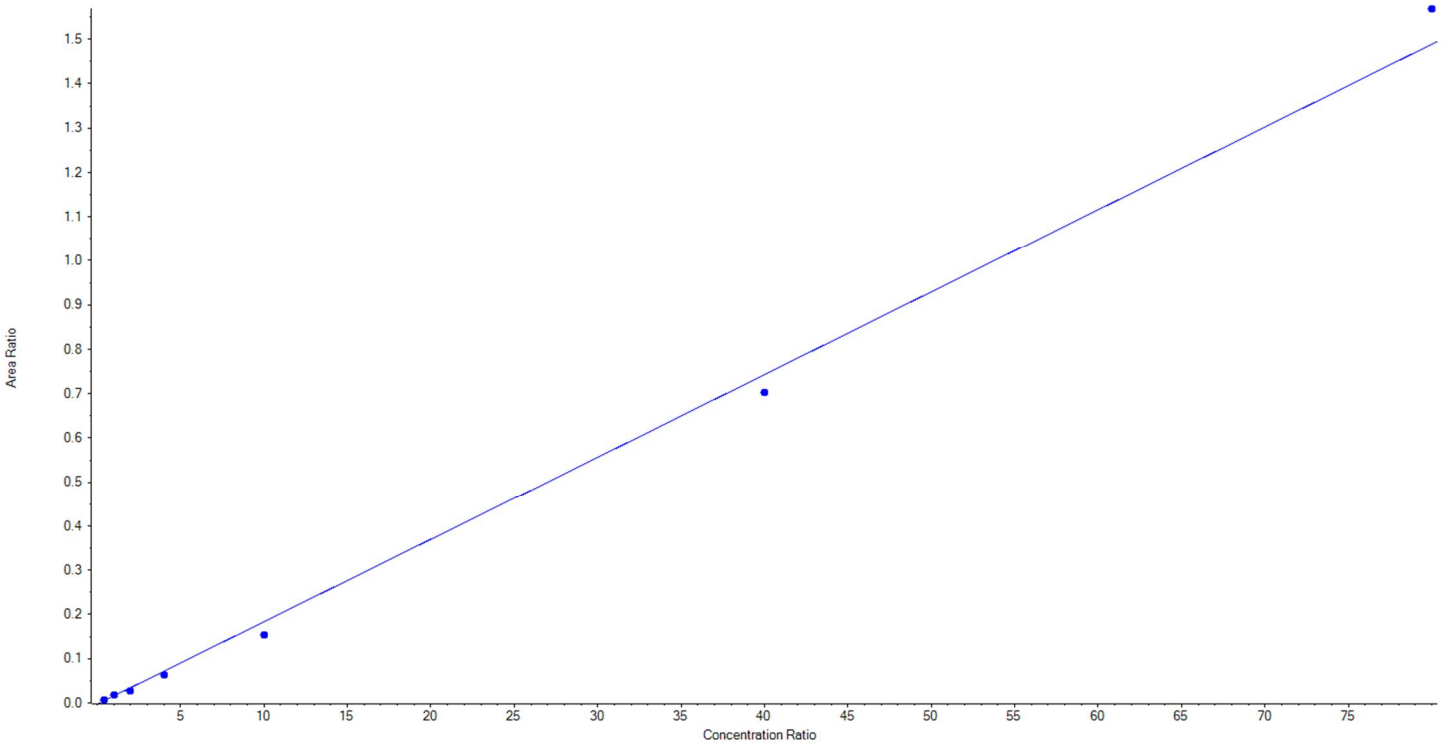
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHpA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 363.0 / 169.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C8-PFOA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.01865 x + -0.00294 (r = 0.99699) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 126.607387 | 126.6 |
| 3 | JY39 | L2 | True | 250.00 | 291.760656 | 116.7 |
| 4 | JY40 | L3 | True | 500.00 | 417.285946 | 83.5 |
| 5 | JY41 | L4 | True | 1000.00 | 896.485634 | 89.7 |
| 6 | JY42 | L5 | True | 2500.00 | 2090.680566 | 83.6 |
| 7 | JY43 | L6 | True | 10000.00 | 9463.895250 | 94.6 |
| 8 | JY44 | L7 | True | 20000.00 | 21063.284561 | 105.3 |



BATTELLE

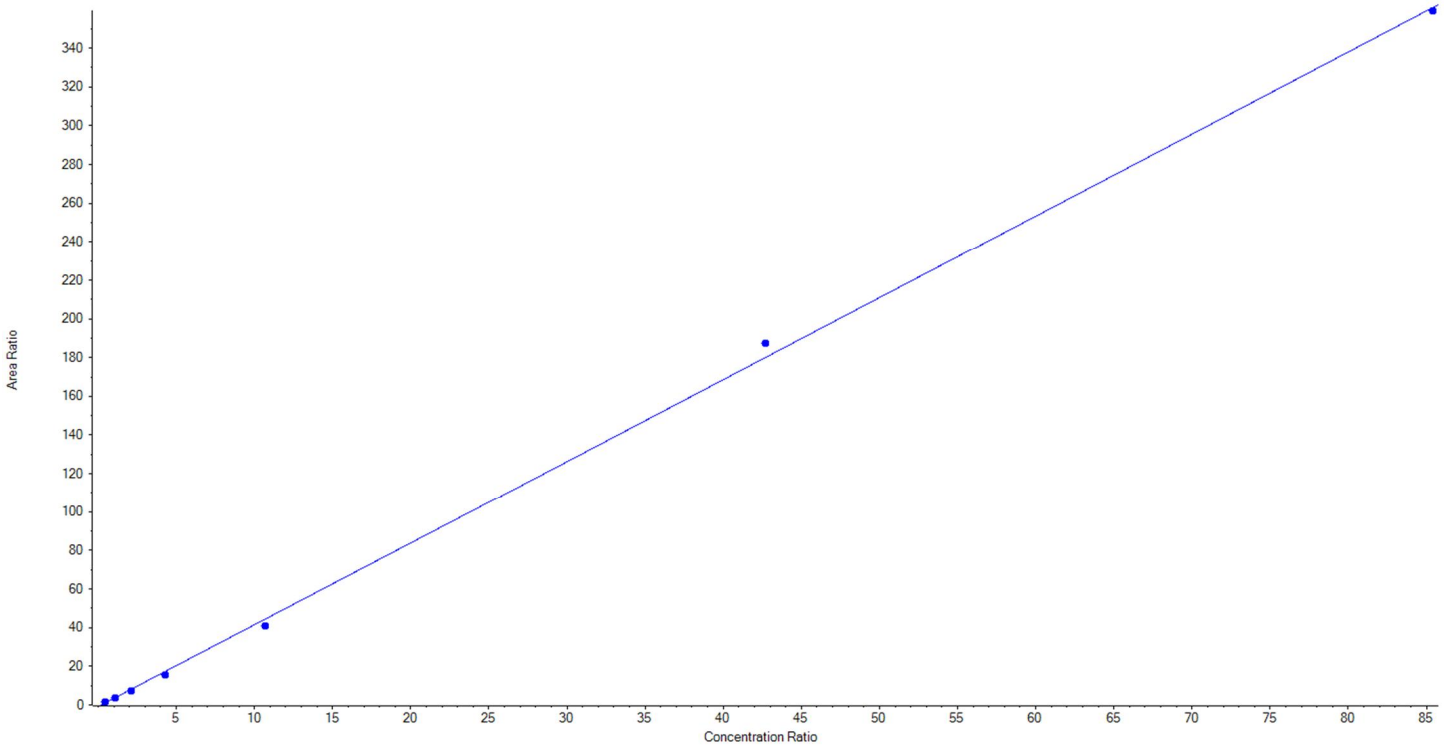
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHxS_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 399.0 / 80.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C3-PFHxS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 4.23537 x + -0.84536 (r = 0.99917) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 101.00 | 126.099371 | 124.9 |
| 3 | JY39 | L2 | True | 252.50 | 246.750083 | 97.7 |
| 4 | JY40 | L3 | True | 505.00 | 455.053362 | 90.1 |
| 5 | JY41 | L4 | True | 1010.00 | 928.278420 | 91.9 |
| 6 | JY42 | L5 | True | 2525.00 | 2316.855490 | 91.8 |
| 7 | JY43 | L6 | True | 10100.00 | 10517.109004 | 104.1 |
| 8 | JY44 | L7 | True | 20200.00 | 20103.354269 | 99.5 |



BATTELLE

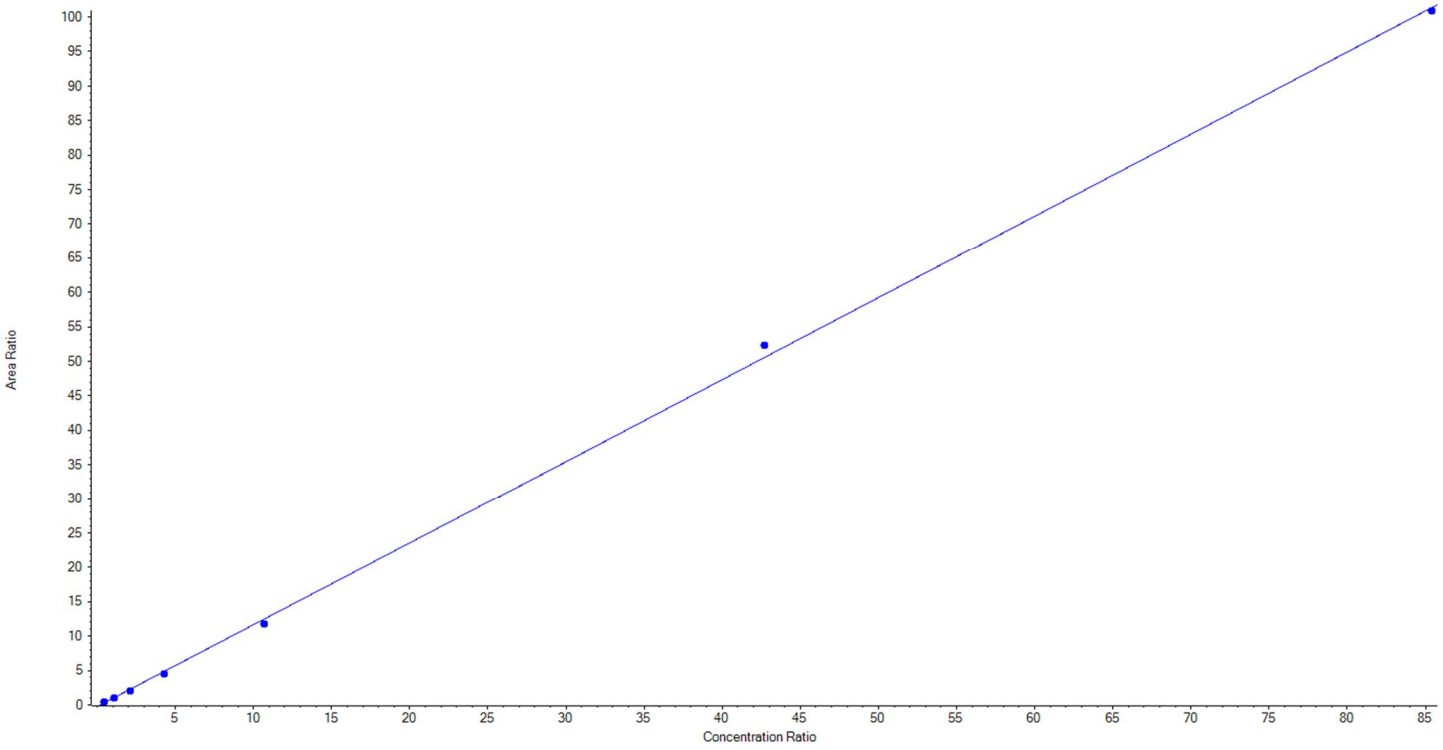
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFHxS_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 399.0 / 99.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C3-PFHxS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.18953 x + -0.23223 (r = 0.99941) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 101.00 | 125.405816 | 124.2 |
| 3 | JY39 | L2 | True | 252.50 | 238.832101 | 94.6 |
| 4 | JY40 | L3 | True | 505.00 | 462.800440 | 91.6 |
| 5 | JY41 | L4 | True | 1010.00 | 934.199524 | 92.5 |
| 6 | JY42 | L5 | True | 2525.00 | 2375.949764 | 94.1 |
| 7 | JY43 | L6 | True | 10100.00 | 10452.350229 | 103.5 |
| 8 | JY44 | L7 | True | 20200.00 | 20103.962127 | 99.5 |



BATTELLE

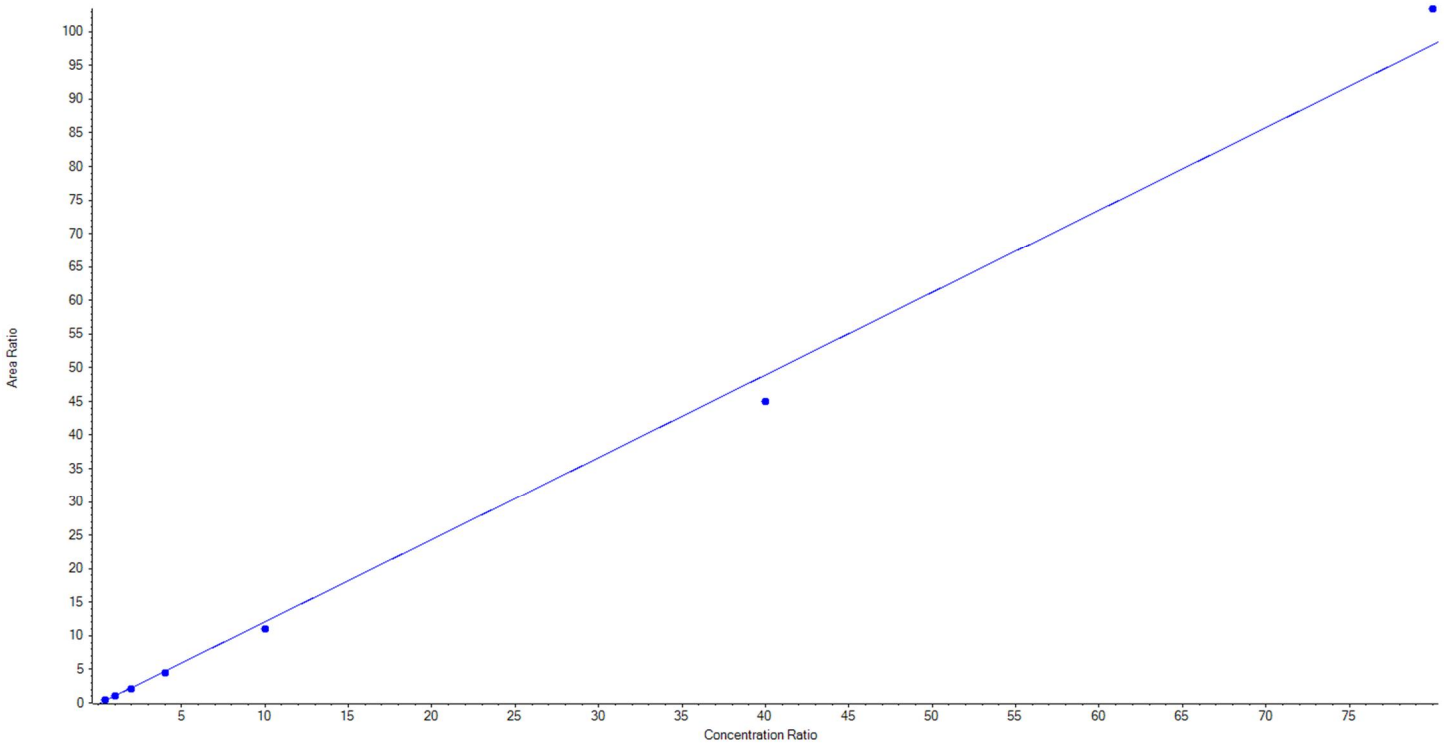
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFOA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 413.0 / 369.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C8-PFOA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.22810 x + -0.19423 (r = 0.99758) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 123.488647 | 123.5 |
| 3 | JY39 | L2 | True | 250.00 | 251.671145 | 100.7 |
| 4 | JY40 | L3 | True | 500.00 | 458.269834 | 91.7 |
| 5 | JY41 | L4 | True | 1000.00 | 955.748778 | 95.6 |
| 6 | JY42 | L5 | True | 2500.00 | 2280.876737 | 91.2 |
| 7 | JY43 | L6 | True | 10000.00 | 9195.851434 | 92.0 |
| 8 | JY44 | L7 | True | 20000.00 | 21084.093425 | 105.4 |



BATTELLE

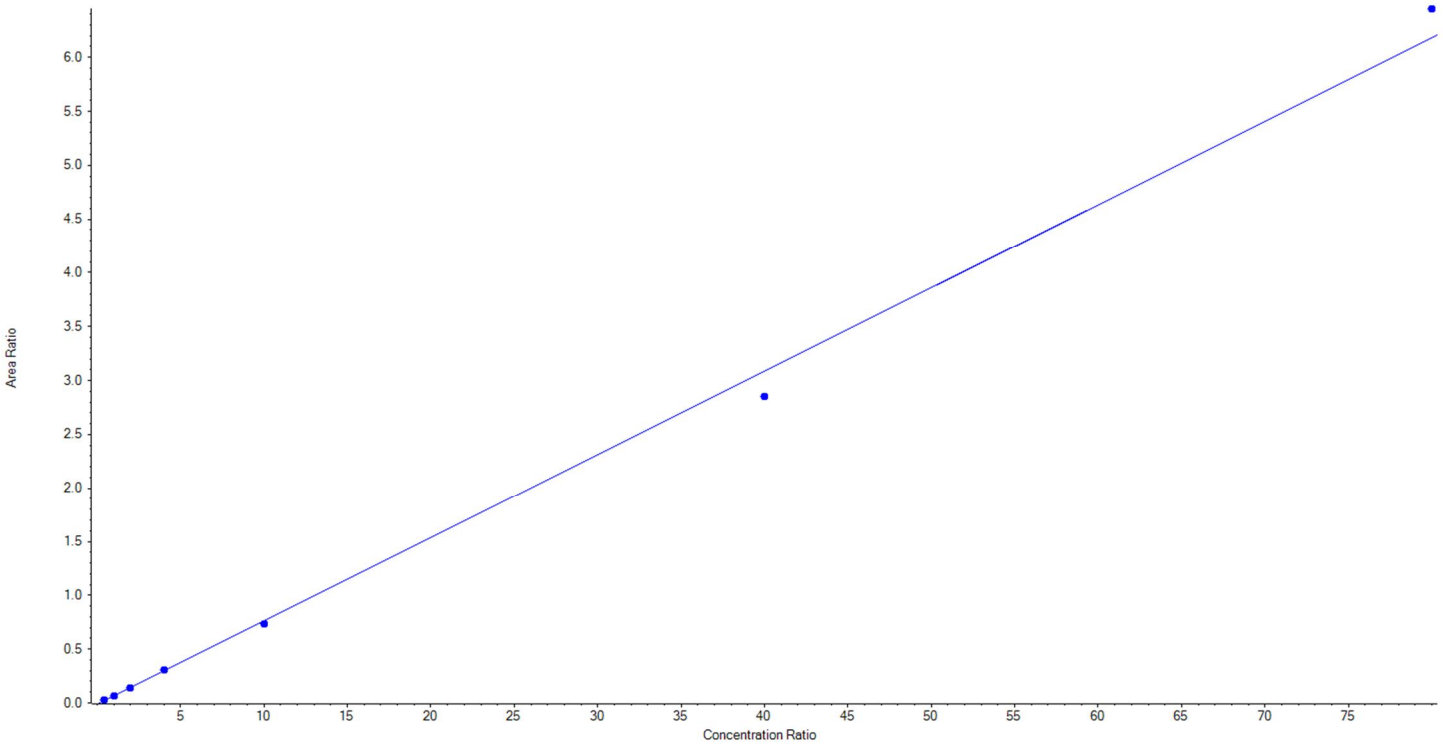
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFOA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 413.0 / 169.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C8-PFOA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.07739 x + -0.01016 (r = 0.99838) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 115.526510 | 115.5 |
| 3 | JY39 | L2 | True | 250.00 | 236.072750 | 94.4 |
| 4 | JY40 | L3 | True | 500.00 | 478.820620 | 95.8 |
| 5 | JY41 | L4 | True | 1000.00 | 1009.636830 | 101.0 |
| 6 | JY42 | L5 | True | 2500.00 | 2417.165222 | 96.7 |
| 7 | JY43 | L6 | True | 10000.00 | 9233.216753 | 92.3 |
| 8 | JY44 | L7 | True | 20000.00 | 20859.561314 | 104.3 |



BATTELLE

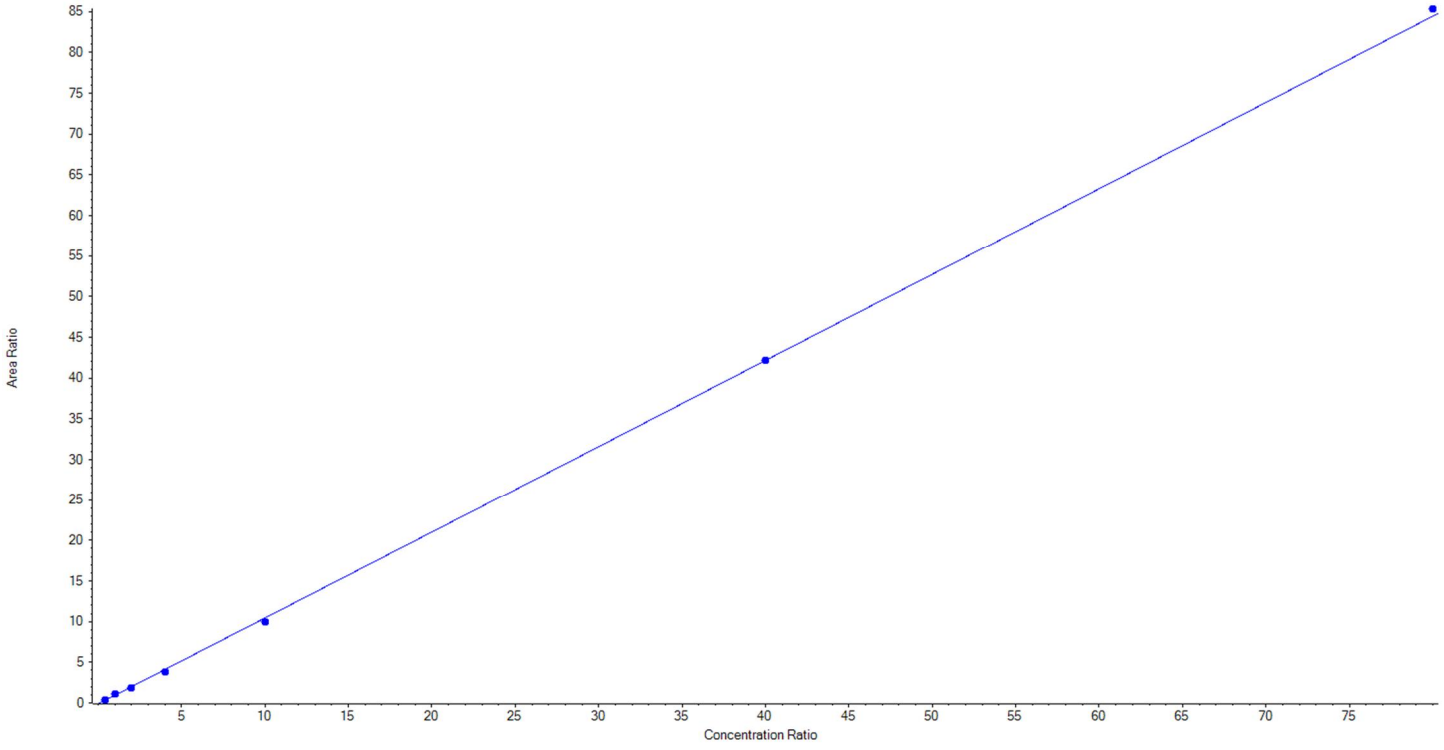
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFNA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 463.0 / 419.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C9-PFNA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.05685 x + -0.11971 (r = 0.99968) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 107.015449 | 107.0 |
| 3 | JY39 | L2 | True | 250.00 | 278.560077 | 111.4 |
| 4 | JY40 | L3 | True | 500.00 | 464.832649 | 93.0 |
| 5 | JY41 | L4 | True | 1000.00 | 927.907689 | 92.8 |
| 6 | JY42 | L5 | True | 2500.00 | 2371.276802 | 94.9 |
| 7 | JY43 | L6 | True | 10000.00 | 9990.022487 | 99.9 |
| 8 | JY44 | L7 | True | 20000.00 | 20210.384848 | 101.1 |



BATTELLE

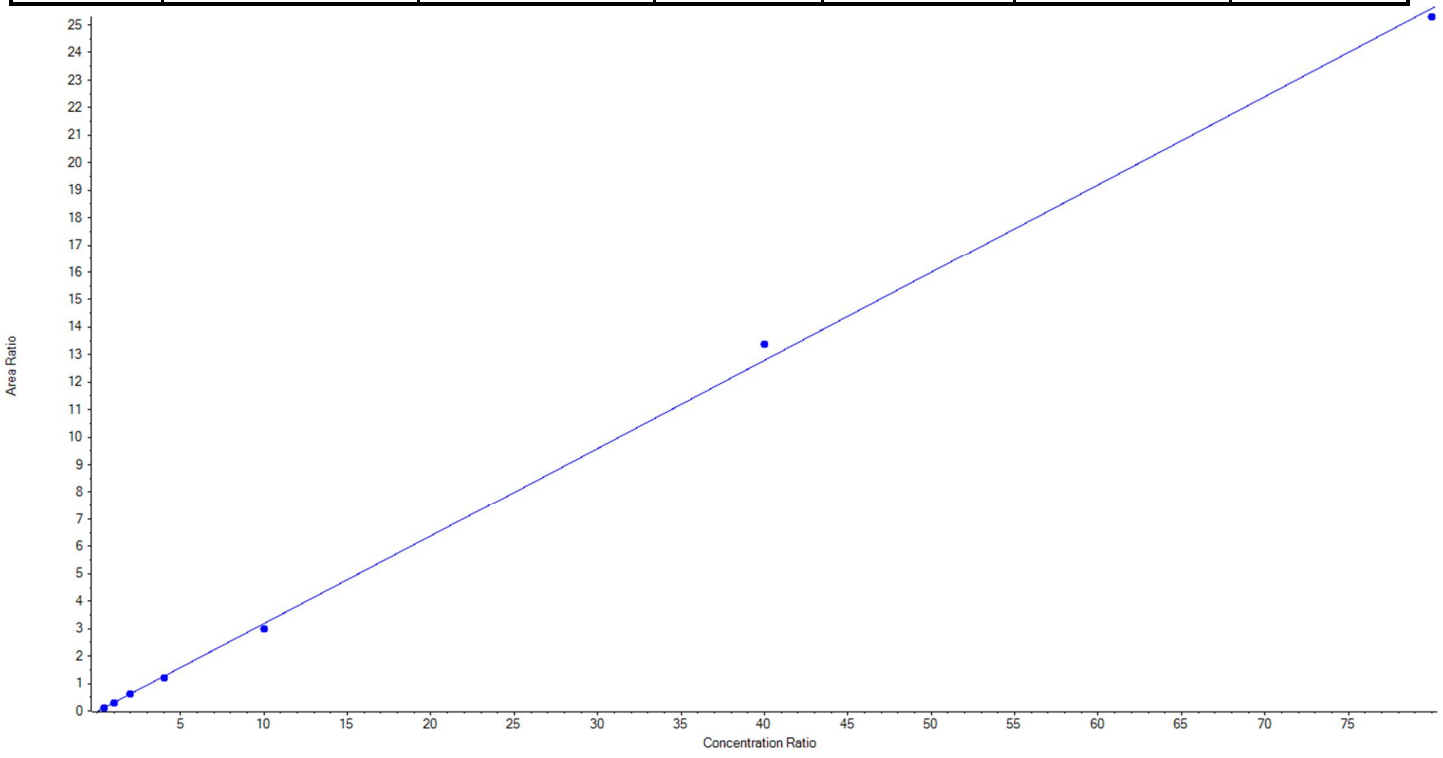
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFNA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 463.0 / 219.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C9-PFNA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.32026 x + -0.01897 (r = 0.99944) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 107.867314 | 107.9 |
| 3 | JY39 | L2 | True | 250.00 | 253.733268 | 101.5 |
| 4 | JY40 | L3 | True | 500.00 | 495.088887 | 99.0 |
| 5 | JY41 | L4 | True | 1000.00 | 944.716102 | 94.5 |
| 6 | JY42 | L5 | True | 2500.00 | 2348.525773 | 93.9 |
| 7 | JY43 | L6 | True | 10000.00 | 10441.723314 | 104.4 |
| 8 | JY44 | L7 | True | 20000.00 | 19758.345342 | 98.8 |



BATTELLE

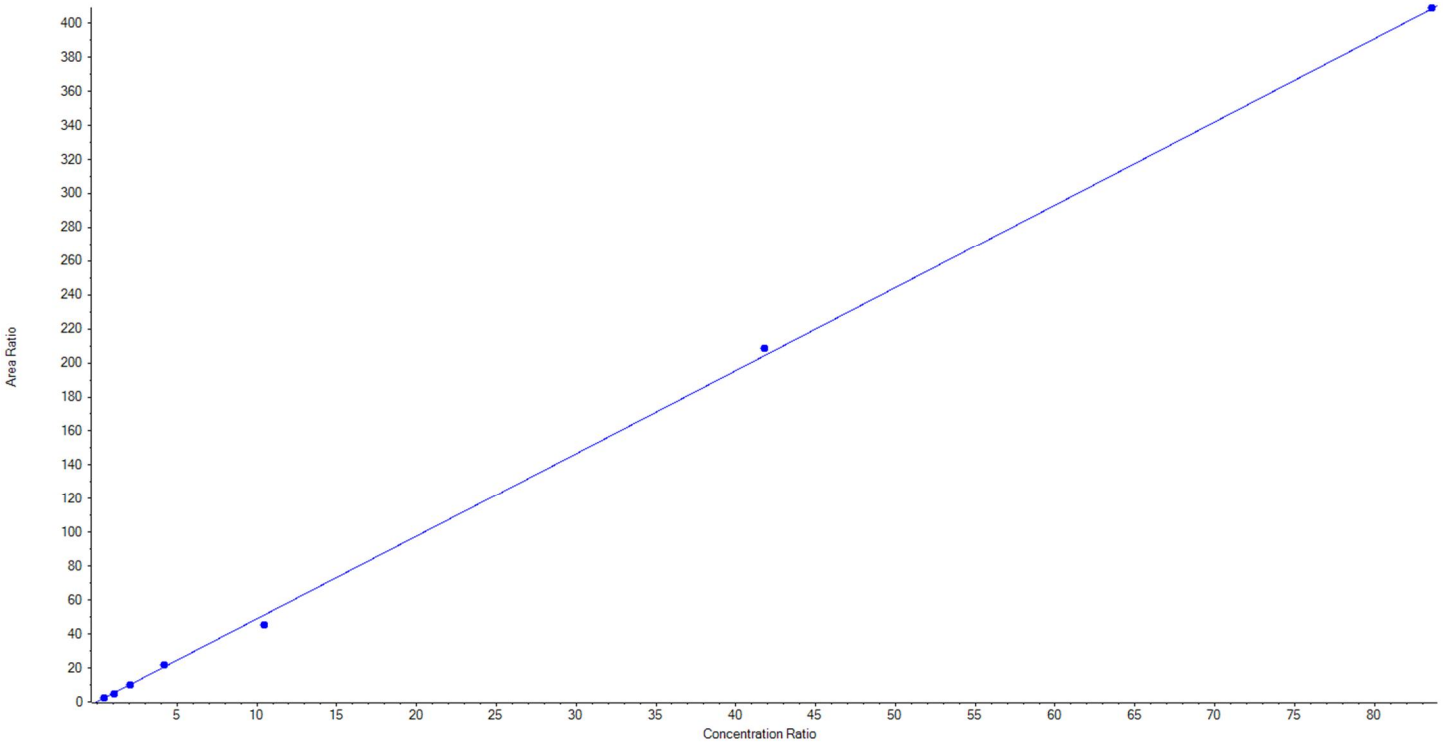
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFOS_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 499.0 / 80.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C8-PFOS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 4.88434 x + 0.09297 (r = 0.99923) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 113.148143 | 113.2 |
| 3 | JY39 | L2 | True | 250.00 | 233.073775 | 93.2 |
| 4 | JY40 | L3 | True | 500.00 | 479.111009 | 95.8 |
| 5 | JY41 | L4 | True | 1000.00 | 1072.470671 | 107.3 |
| 6 | JY42 | L5 | True | 2500.00 | 2205.334880 | 88.2 |
| 7 | JY43 | L6 | True | 10000.00 | 10221.075140 | 102.2 |
| 8 | JY44 | L7 | True | 20000.00 | 20025.786383 | 100.1 |



BATTELLE

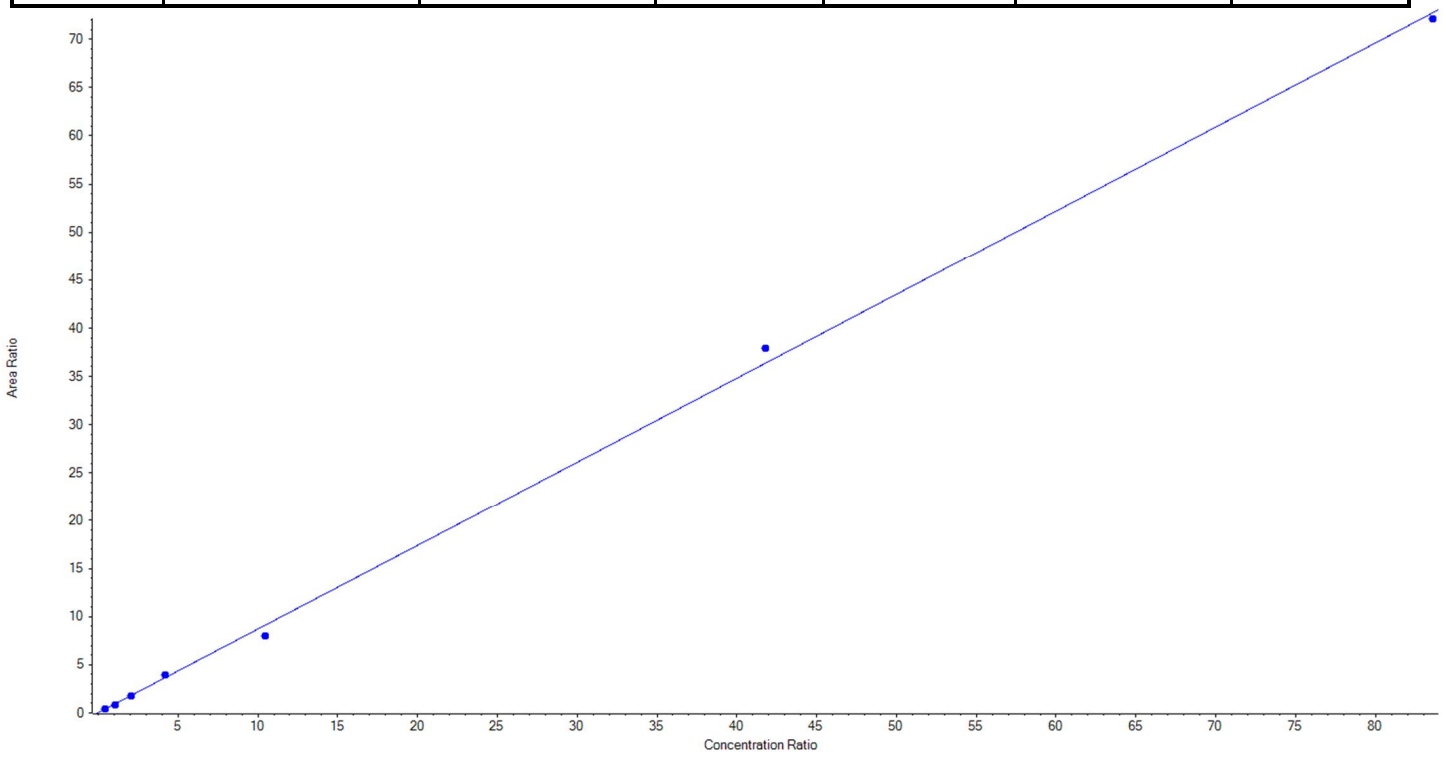
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFOS_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 499.0 / 99.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C8-PFOS | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.86986 x + 0.01336 (r = 0.99881) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 117.347383 | 117.4 |
| 3 | JY39 | L2 | True | 250.00 | 217.248927 | 86.9 |
| 4 | JY40 | L3 | True | 500.00 | 477.582506 | 95.5 |
| 5 | JY41 | L4 | True | 1000.00 | 1091.956540 | 109.2 |
| 6 | JY42 | L5 | True | 2500.00 | 2190.256613 | 87.6 |
| 7 | JY43 | L6 | True | 10000.00 | 10430.517196 | 104.3 |
| 8 | JY44 | L7 | True | 20000.00 | 19825.090835 | 99.1 |



BATTELLE

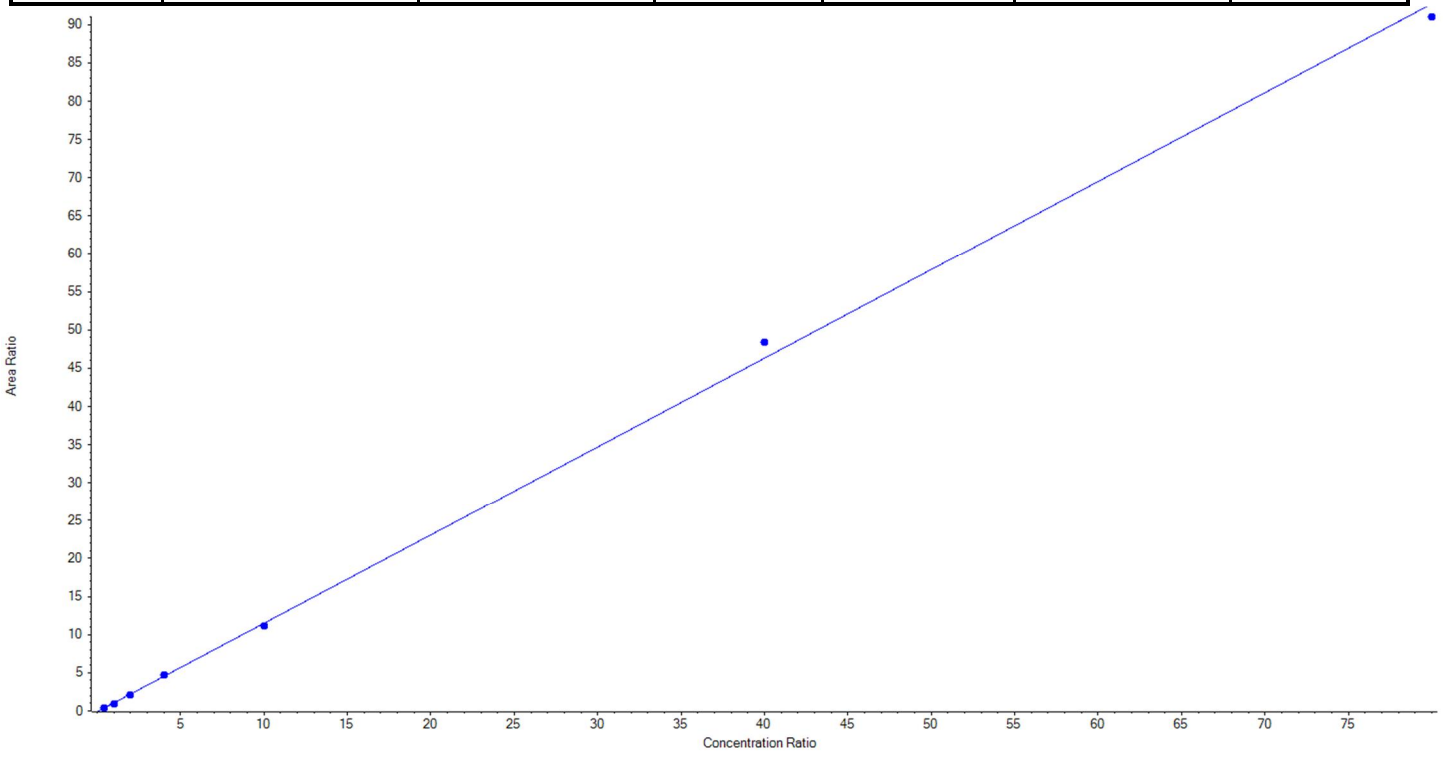
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFDA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 513.0 / 469.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C6-PFDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.16034 x + -0.10710 (r = 0.99947) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 110.198423 | 110.2 |
| 3 | JY39 | L2 | True | 250.00 | 231.107869 | 92.4 |
| 4 | JY40 | L3 | True | 500.00 | 470.043896 | 94.0 |
| 5 | JY41 | L4 | True | 1000.00 | 1035.018294 | 103.5 |
| 6 | JY42 | L5 | True | 2500.00 | 2432.445932 | 97.3 |
| 7 | JY43 | L6 | True | 10000.00 | 10438.811237 | 104.4 |
| 8 | JY44 | L7 | True | 20000.00 | 19632.374349 | 98.2 |



BATTELLE

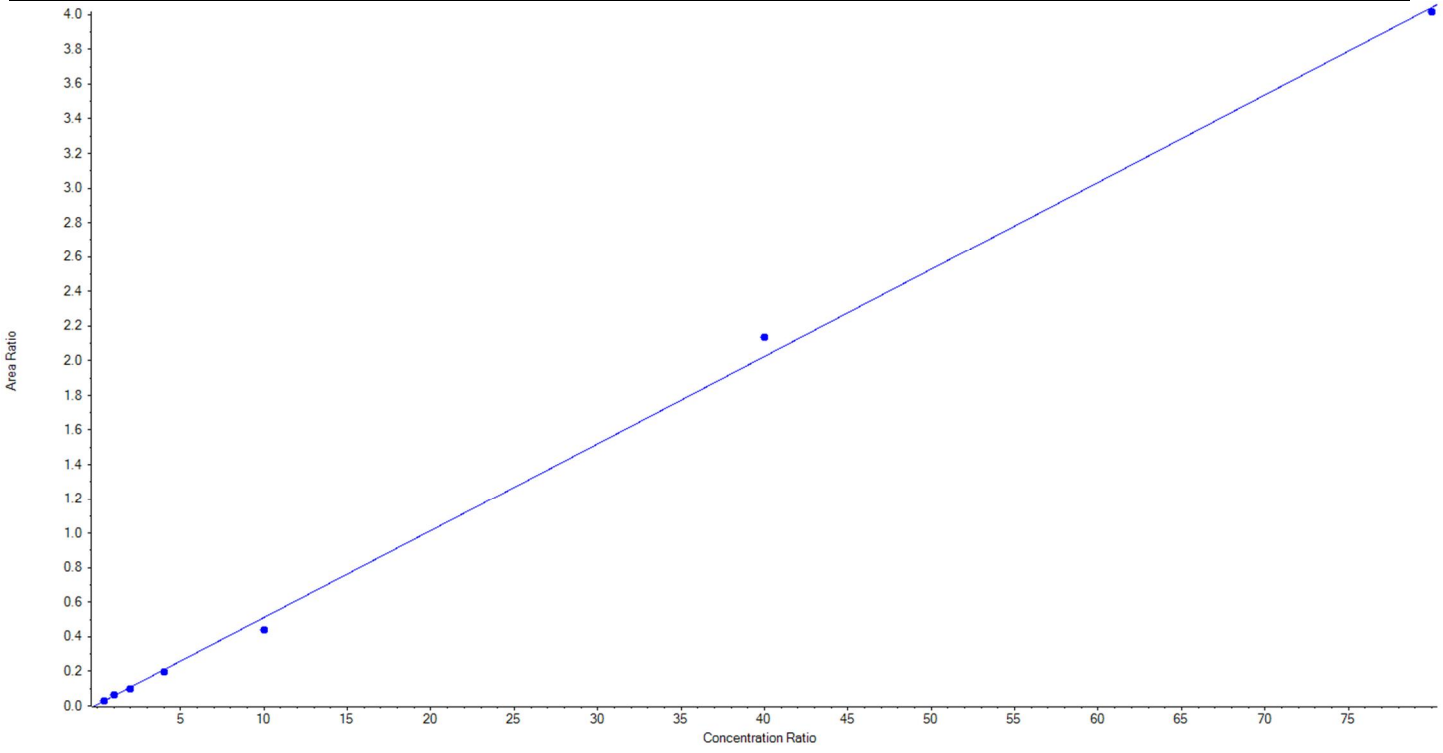
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFDA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 513.0 / 219.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C6-PFDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.05043 x + 0.00732 (r = 0.99845) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 114.079000 | 114.1 |
| 3 | JY39 | L2 | True | 250.00 | 275.419951 | 110.2 |
| 4 | JY40 | L3 | True | 500.00 | 457.576231 | 91.5 |
| 5 | JY41 | L4 | True | 1000.00 | 940.050222 | 94.0 |
| 6 | JY42 | L5 | True | 2500.00 | 2132.114826 | 85.3 |
| 7 | JY43 | L6 | True | 10000.00 | 10558.871916 | 105.6 |
| 8 | JY44 | L7 | True | 20000.00 | 19871.887855 | 99.4 |



BATTELLE

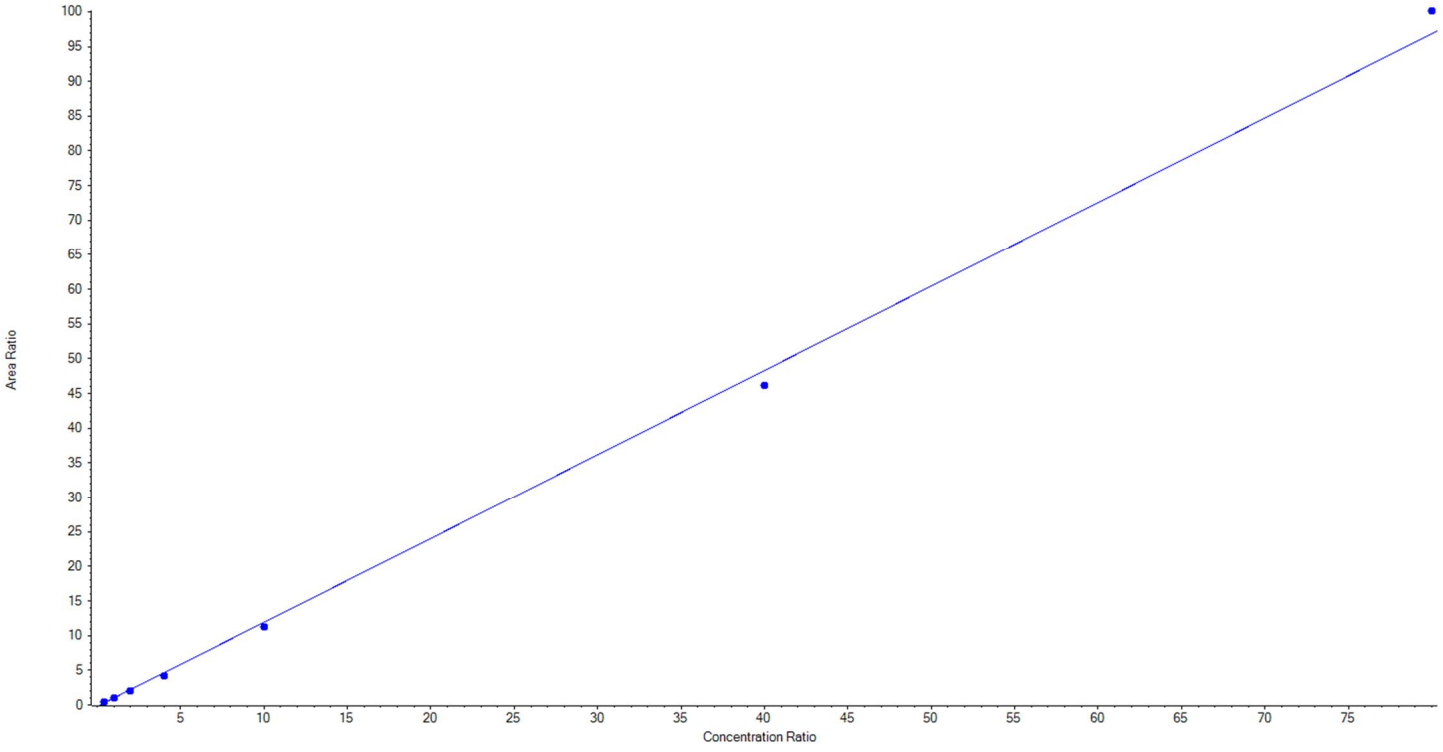
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFUnA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 563.0 / 519.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C7-PFUnA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.21353 x + -0.22259 (r = 0.99899) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 122.943043 | 122.9 |
| 3 | JY39 | L2 | True | 250.00 | 246.726851 | 98.7 |
| 4 | JY40 | L3 | True | 500.00 | 463.660604 | 92.7 |
| 5 | JY41 | L4 | True | 1000.00 | 919.395673 | 91.9 |
| 6 | JY42 | L5 | True | 2500.00 | 2369.453411 | 94.8 |
| 7 | JY43 | L6 | True | 10000.00 | 9555.457961 | 95.6 |
| 8 | JY44 | L7 | True | 20000.00 | 20672.362456 | 103.4 |



BATTELLE

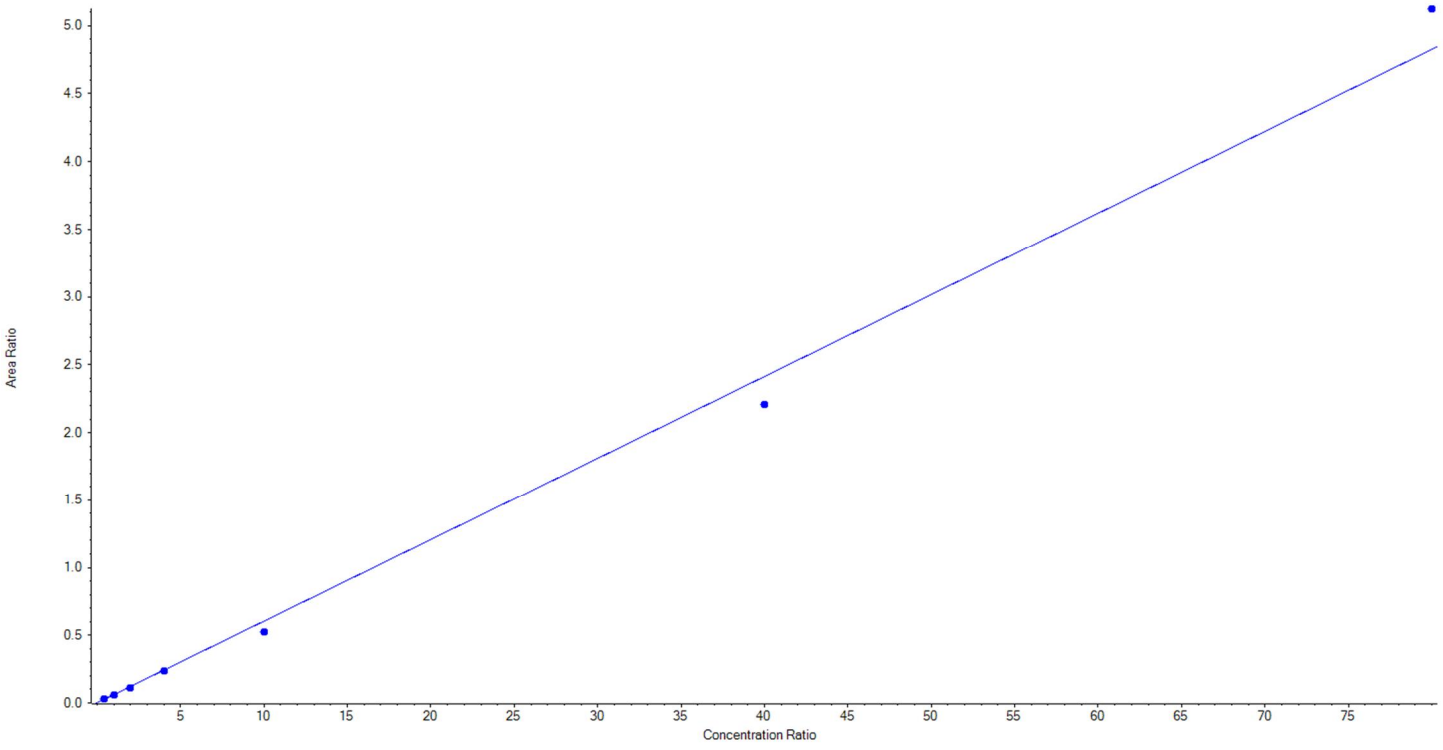
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFUnA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 563.0 / 269.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C7-PFUnA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.06032 x + 9.82959e-4 (r = 0.99675) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 129.206562 | 129.2 |
| 3 | JY39 | L2 | True | 250.00 | 241.347698 | 96.5 |
| 4 | JY40 | L3 | True | 500.00 | 467.242328 | 93.5 |
| 5 | JY41 | L4 | True | 1000.00 | 968.076678 | 96.8 |
| 6 | JY42 | L5 | True | 2500.00 | 2157.204163 | 86.3 |
| 7 | JY43 | L6 | True | 10000.00 | 9155.089249 | 91.6 |
| 8 | JY44 | L7 | True | 20000.00 | 21231.833322 | 106.2 |



BATTELLE

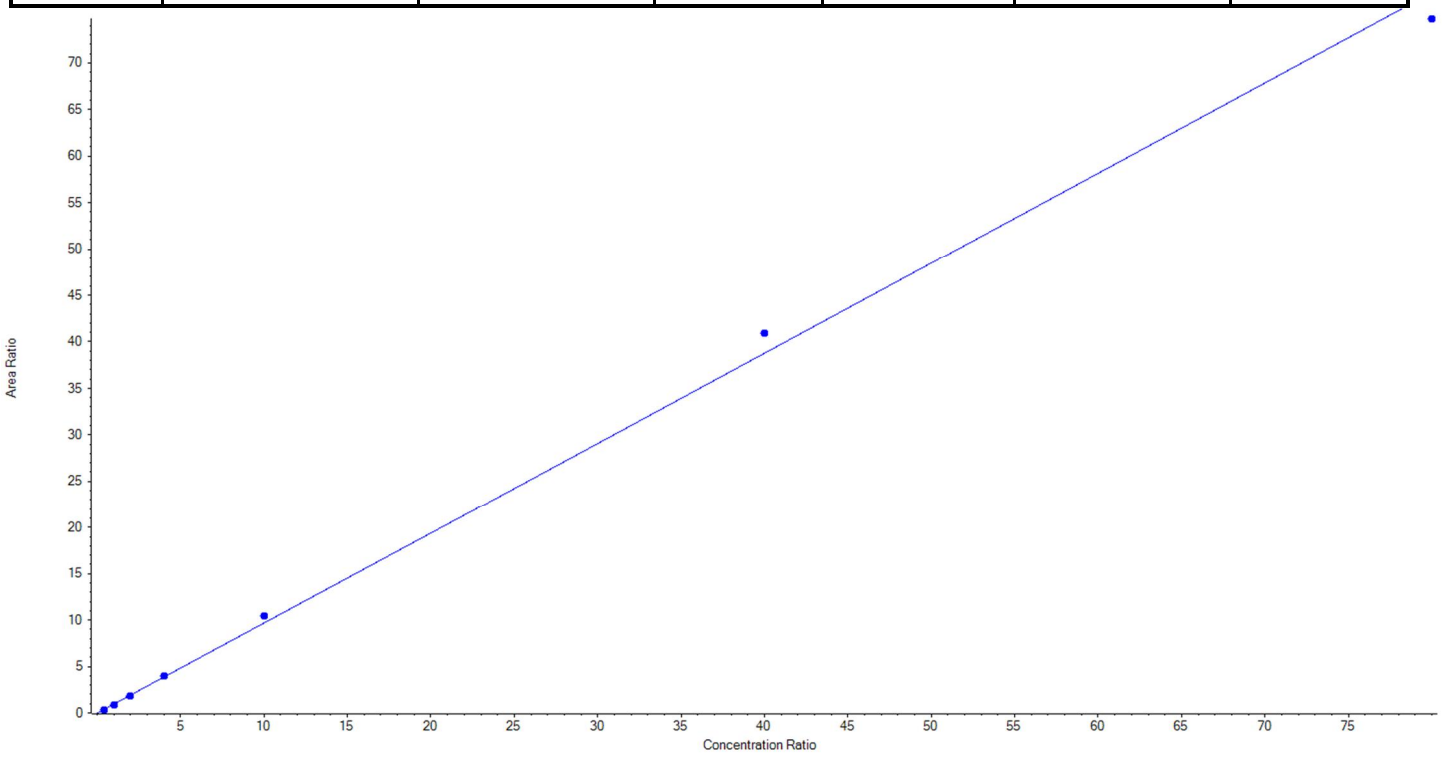
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFDoA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 613.0 / 569.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C2-PFDoA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.96946 x + -0.01373 (r = 0.99883) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 98.610714 | 98.6 |
| 3 | JY39 | L2 | True | 250.00 | 233.920658 | 93.6 |
| 4 | JY40 | L3 | True | 500.00 | 475.852120 | 95.2 |
| 5 | JY41 | L4 | True | 1000.00 | 1032.761138 | 103.3 |
| 6 | JY42 | L5 | True | 2500.00 | 2688.000463 | 107.5 |
| 7 | JY43 | L6 | True | 10000.00 | 10550.038320 | 105.5 |
| 8 | JY44 | L7 | True | 20000.00 | 19270.816586 | 96.4 |



BATTELLE

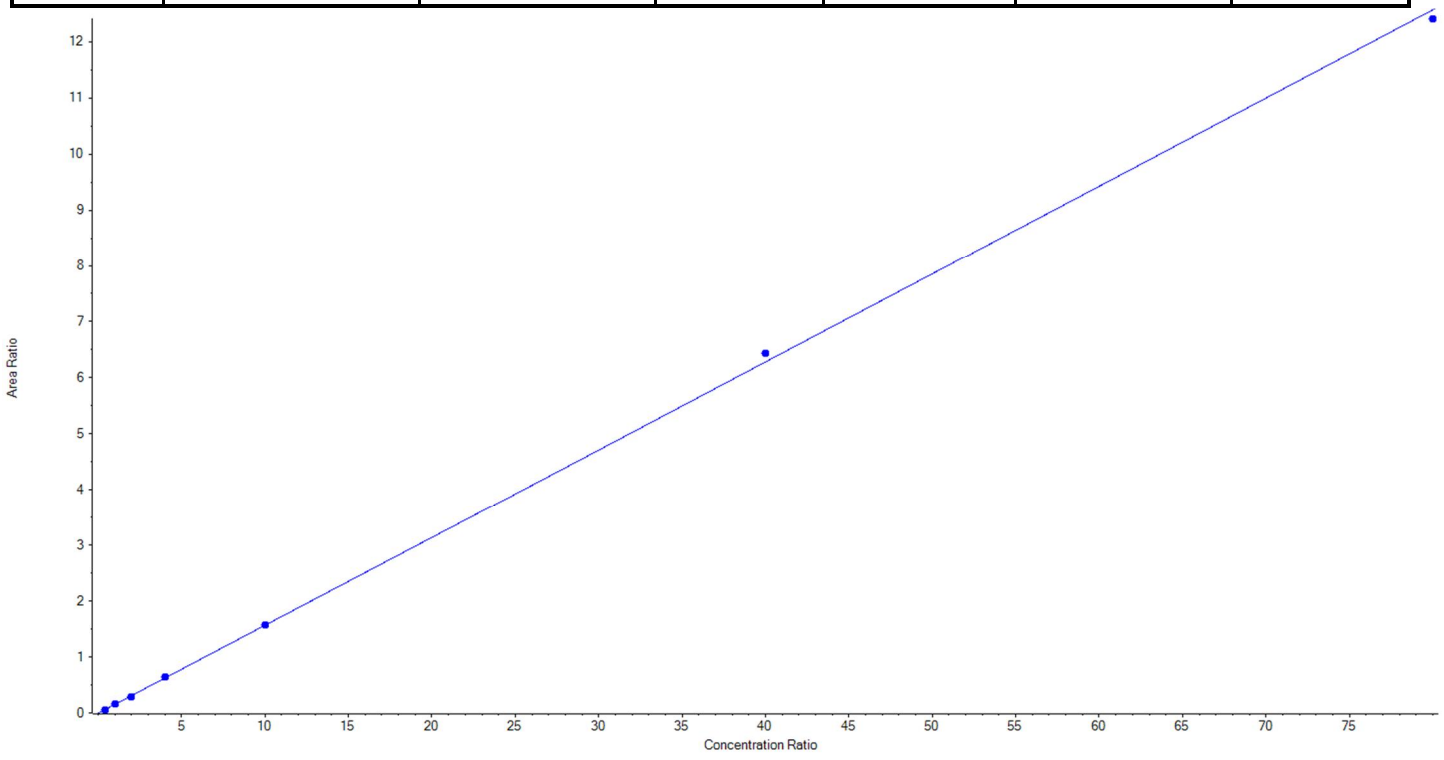
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFDoA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 613.0 / 319.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C2-PFDoA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.15718 x + -0.00485 (r = 0.99982) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 100.020562 | 100.0 |
| 3 | JY39 | L2 | True | 250.00 | 250.671630 | 100.3 |
| 4 | JY40 | L3 | True | 500.00 | 475.157931 | 95.0 |
| 5 | JY41 | L4 | True | 1000.00 | 1031.153986 | 103.1 |
| 6 | JY42 | L5 | True | 2500.00 | 2511.466237 | 100.5 |
| 7 | JY43 | L6 | True | 10000.00 | 10239.500617 | 102.4 |
| 8 | JY44 | L7 | True | 20000.00 | 19742.029037 | 98.7 |



BATTELLE

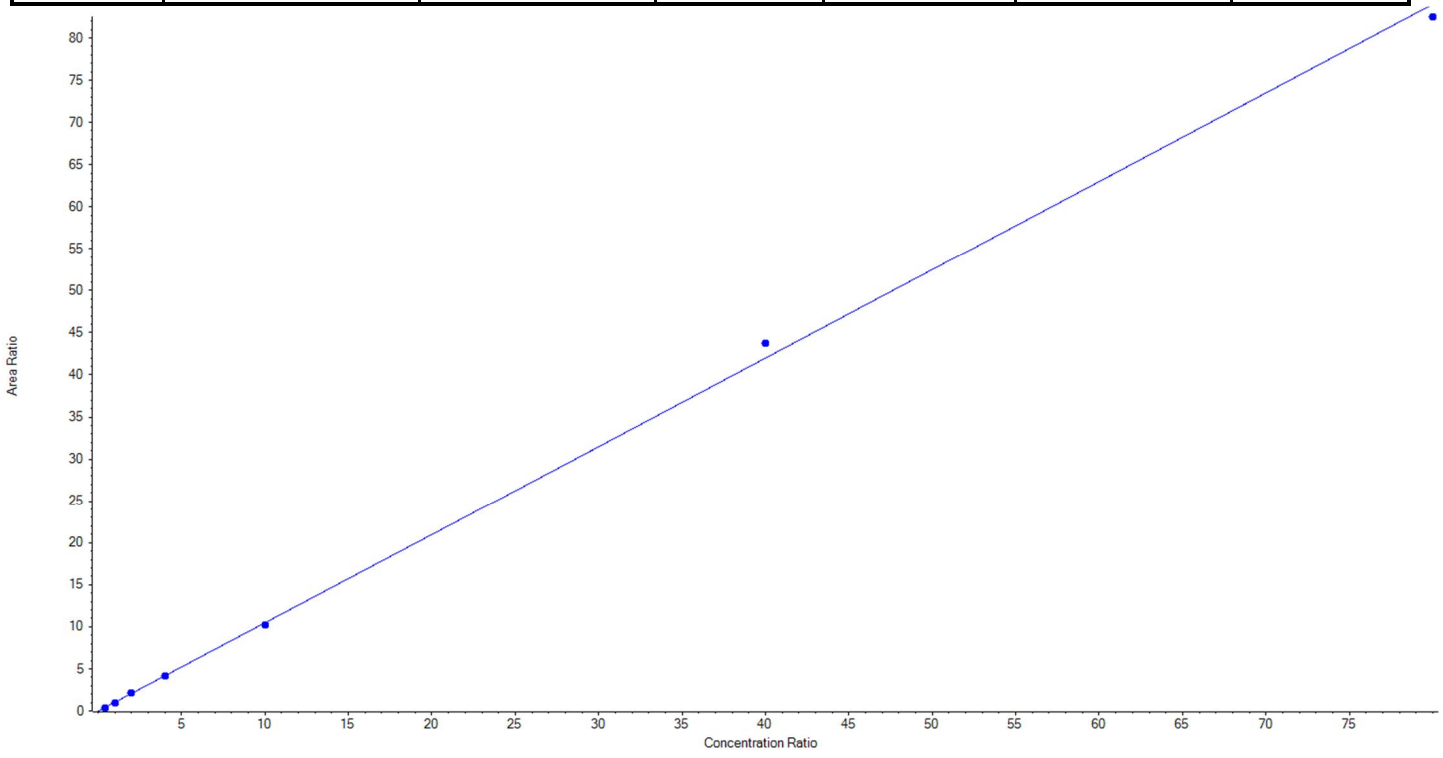
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFTrDA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 663.0 / 619.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C2-PFTeDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.05021 x + -0.02316 (r = 0.99959) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 103.989990 | 104.0 |
| 3 | JY39 | L2 | True | 250.00 | 237.901063 | 95.2 |
| 4 | JY40 | L3 | True | 500.00 | 506.941023 | 101.4 |
| 5 | JY41 | L4 | True | 1000.00 | 989.873487 | 99.0 |
| 6 | JY42 | L5 | True | 2500.00 | 2452.401261 | 98.1 |
| 7 | JY43 | L6 | True | 10000.00 | 10416.702985 | 104.2 |
| 8 | JY44 | L7 | True | 20000.00 | 19642.190190 | 98.2 |



BATTELLE

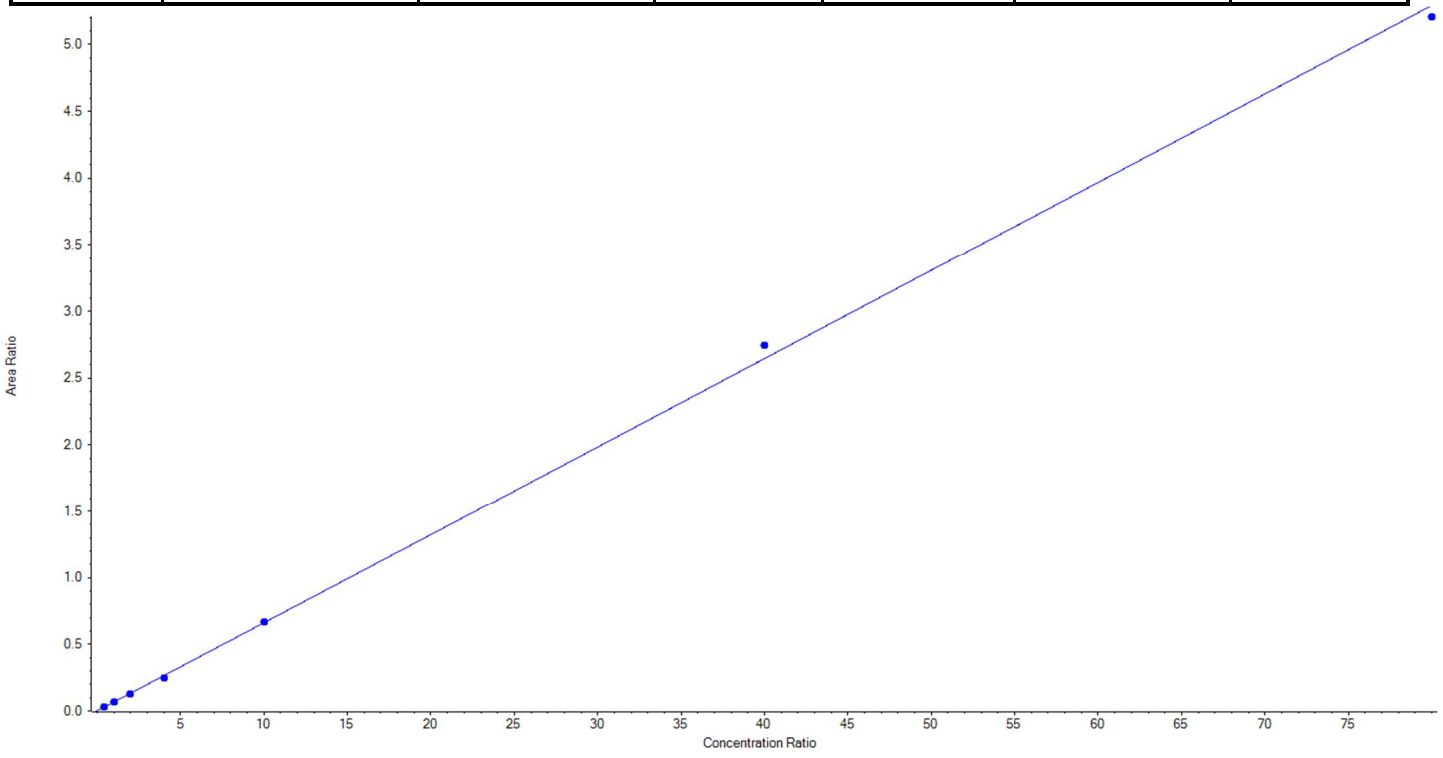
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFTrDA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 663.0 / 169.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C2-PFTeDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.06614 x + 4.21658e-4 (r = 0.99959) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 108.287462 | 108.3 |
| 3 | JY39 | L2 | True | 250.00 | 250.336593 | 100.1 |
| 4 | JY40 | L3 | True | 500.00 | 472.911739 | 94.6 |
| 5 | JY41 | L4 | True | 1000.00 | 938.882600 | 93.9 |
| 6 | JY42 | L5 | True | 2500.00 | 2523.167722 | 100.9 |
| 7 | JY43 | L6 | True | 10000.00 | 10379.703023 | 103.8 |
| 8 | JY44 | L7 | True | 20000.00 | 19676.710861 | 98.4 |



BATTELLE

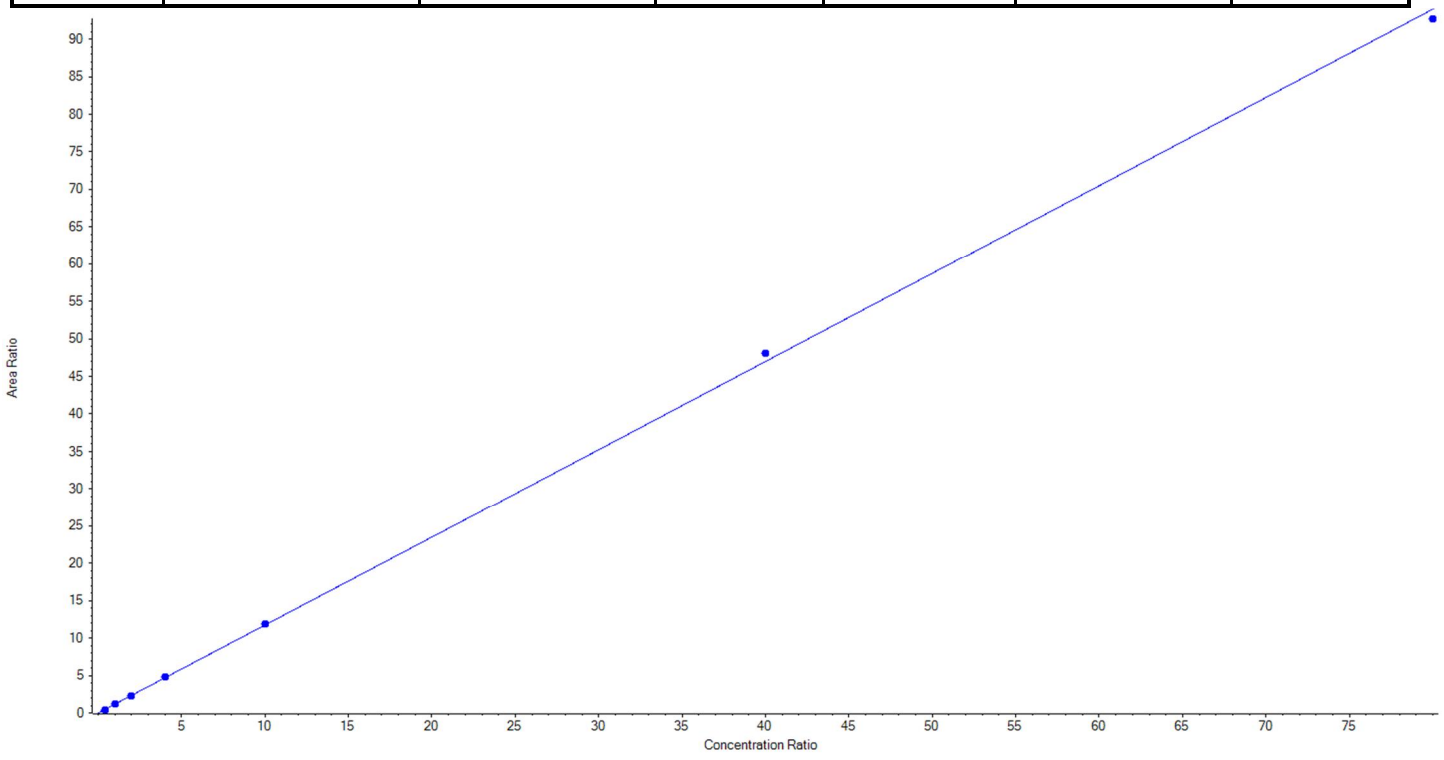
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFTeDA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 713.0 / 669.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C2-PFTeDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.17488 x + -0.00776 (r = 0.99984) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 98.523721 | 98.5 |
| 3 | JY39 | L2 | True | 250.00 | 248.858327 | 99.5 |
| 4 | JY40 | L3 | True | 500.00 | 490.541916 | 98.1 |
| 5 | JY41 | L4 | True | 1000.00 | 1012.450240 | 101.3 |
| 6 | JY42 | L5 | True | 2500.00 | 2540.117327 | 101.6 |
| 7 | JY43 | L6 | True | 10000.00 | 10235.461016 | 102.4 |
| 8 | JY44 | L7 | True | 20000.00 | 19724.047452 | 98.6 |



BATTELLE

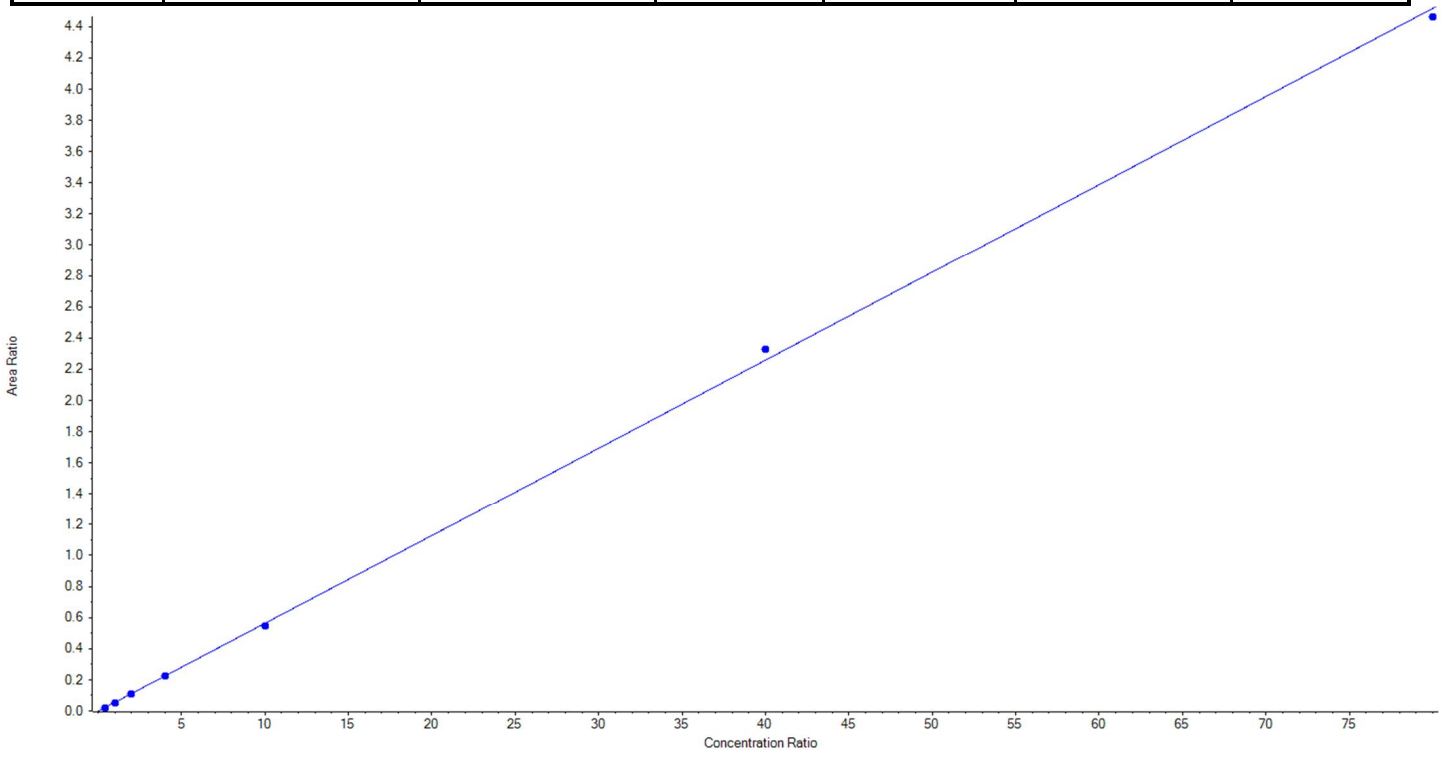
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | PFTeDA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 713.0 / 169.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | 13C2-PFTeDA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.05649 x + -0.00122 (r = 0.99976) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 103.942641 | 103.9 |
| 3 | JY39 | L2 | True | 250.00 | 243.654642 | 97.5 |
| 4 | JY40 | L3 | True | 500.00 | 499.075940 | 99.8 |
| 5 | JY41 | L4 | True | 1000.00 | 993.942996 | 99.4 |
| 6 | JY42 | L5 | True | 2500.00 | 2435.881968 | 97.4 |
| 7 | JY43 | L6 | True | 10000.00 | 10316.645427 | 103.2 |
| 8 | JY44 | L7 | True | 20000.00 | 19756.856386 | 98.8 |



BATTELLE

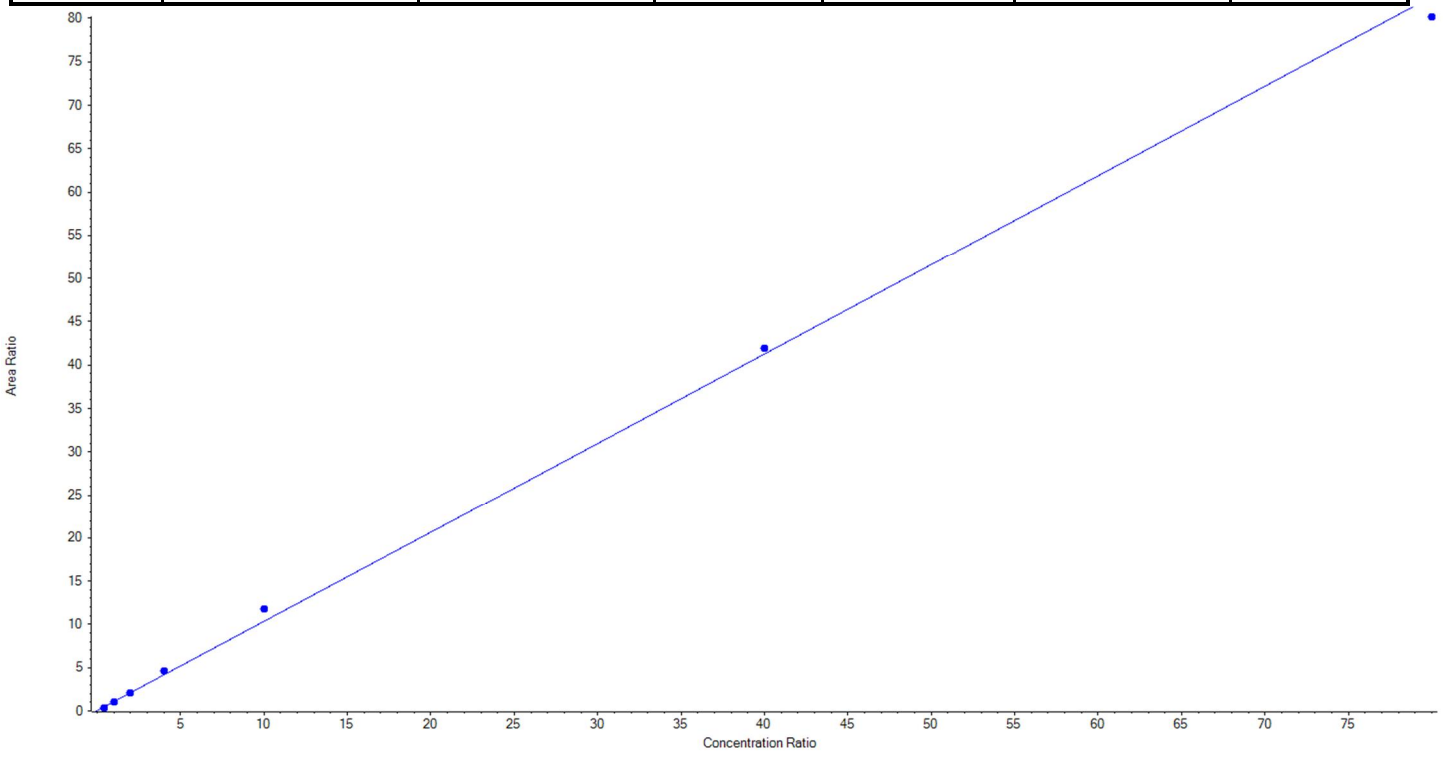
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | NMeFOSAA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 570.0 / 419.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | d3-MeFOSAA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.03070 x + 0.04450 (r = 0.99877) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 83.446543 | 83.5 |
| 3 | JY39 | L2 | True | 250.00 | 244.399054 | 97.8 |
| 4 | JY40 | L3 | True | 500.00 | 483.064727 | 96.6 |
| 5 | JY41 | L4 | True | 1000.00 | 1097.700385 | 109.8 |
| 6 | JY42 | L5 | True | 2500.00 | 2838.922966 | 113.6 |
| 7 | JY43 | L6 | True | 10000.00 | 10168.320127 | 101.7 |
| 8 | JY44 | L7 | True | 20000.00 | 19434.146196 | 97.2 |



BATTELLE

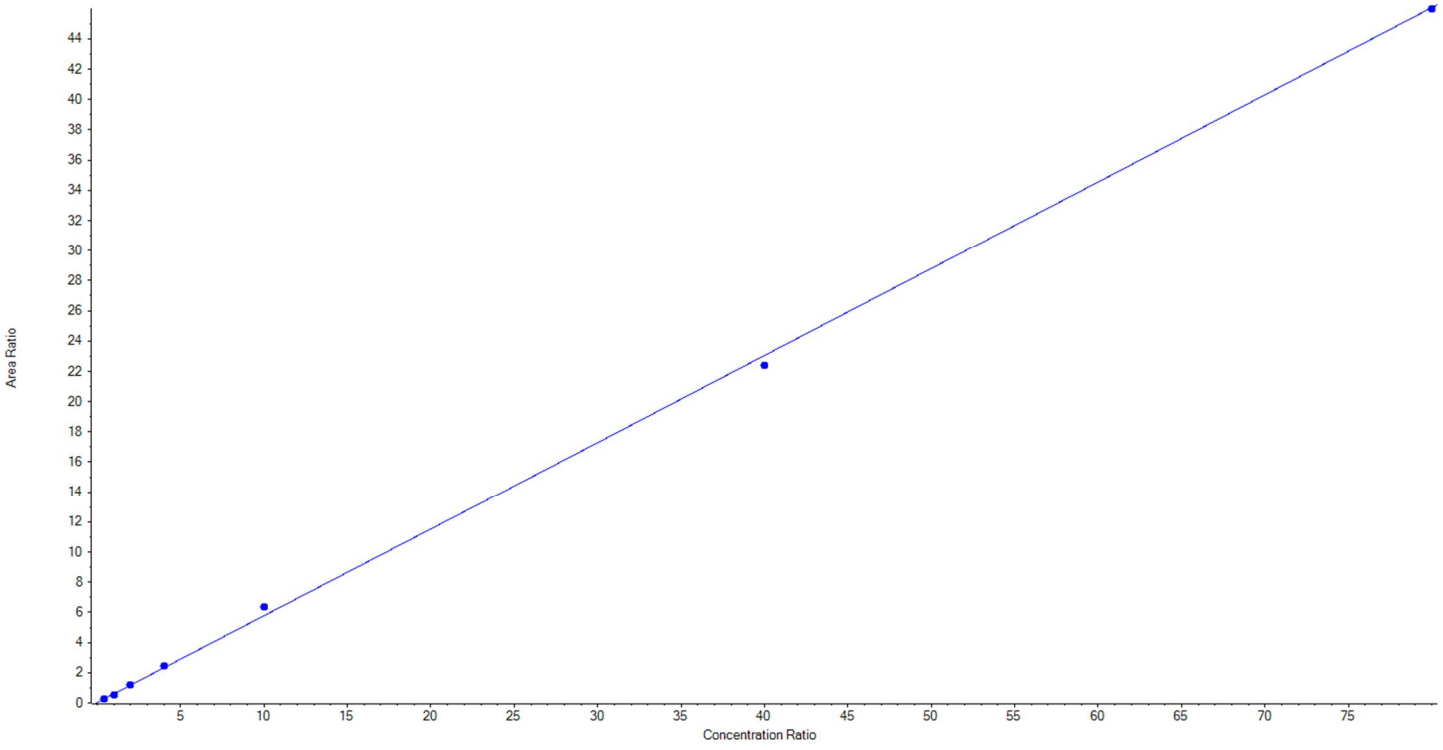
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | NMeFOSAA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 570.0 / 512.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | d3-MeFOSAA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.57549 x + 0.02501 (r = 0.99932) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 94.256719 | 94.3 |
| 3 | JY39 | L2 | True | 250.00 | 226.726746 | 90.7 |
| 4 | JY40 | L3 | True | 500.00 | 502.520187 | 100.5 |
| 5 | JY41 | L4 | True | 1000.00 | 1068.138462 | 106.8 |
| 6 | JY42 | L5 | True | 2500.00 | 2765.525131 | 110.6 |
| 7 | JY43 | L6 | True | 10000.00 | 9729.906041 | 97.3 |
| 8 | JY44 | L7 | True | 20000.00 | 19962.926715 | 99.8 |



BATTELLE

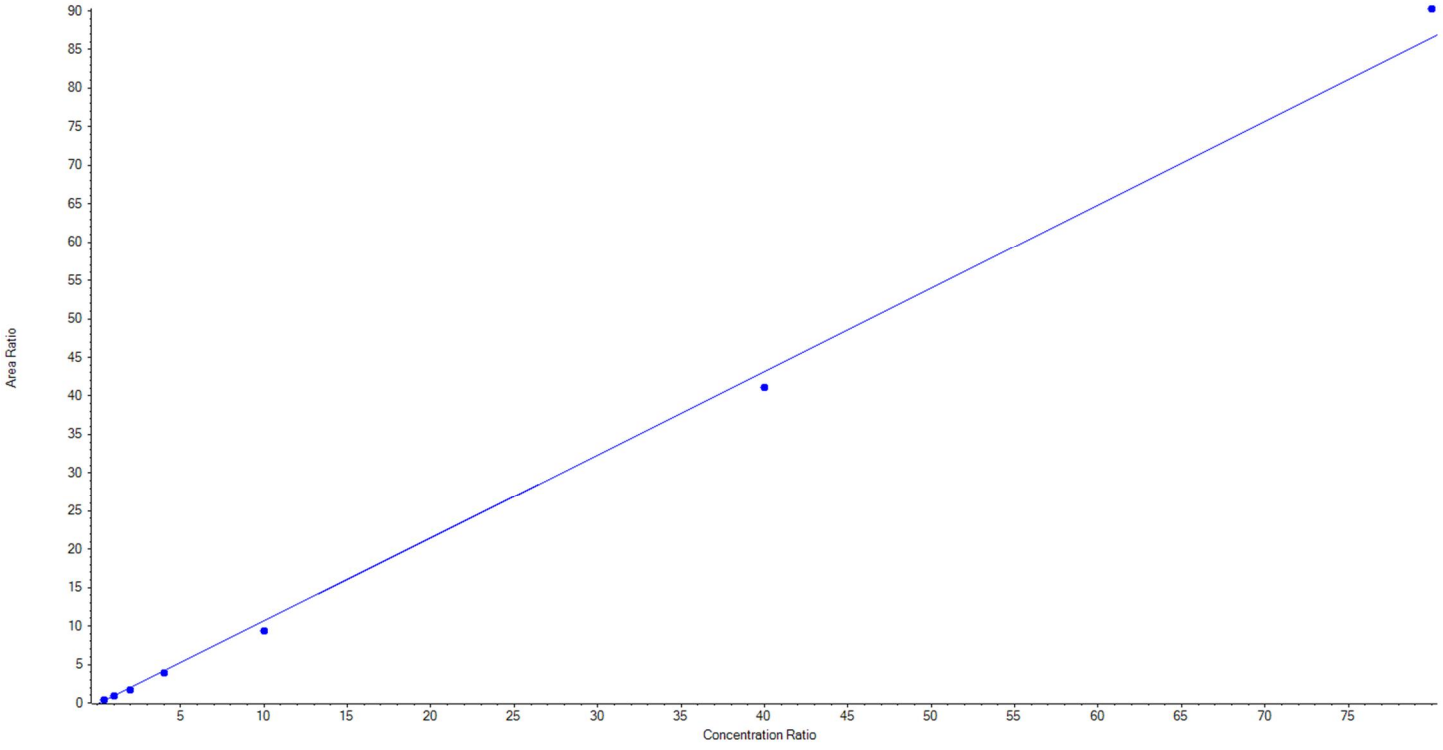
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | NEtFOSAA_1 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 584.0 / 419.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | d5-EtFOSAA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 1.08361 x + -0.17934 (r = 0.99815) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | True | 100.00 | 127.151255 | 127.2 |
| 3 | JY39 | L2 | True | 250.00 | 265.679934 | 106.3 |
| 4 | JY40 | L3 | True | 500.00 | 423.940233 | 84.8 |
| 5 | JY41 | L4 | True | 1000.00 | 937.778212 | 93.8 |
| 6 | JY42 | L5 | True | 2500.00 | 2212.318765 | 88.5 |
| 7 | JY43 | L6 | True | 10000.00 | 9520.499075 | 95.2 |
| 8 | JY44 | L7 | True | 20000.00 | 20862.632526 | 104.3 |



BATTELLE

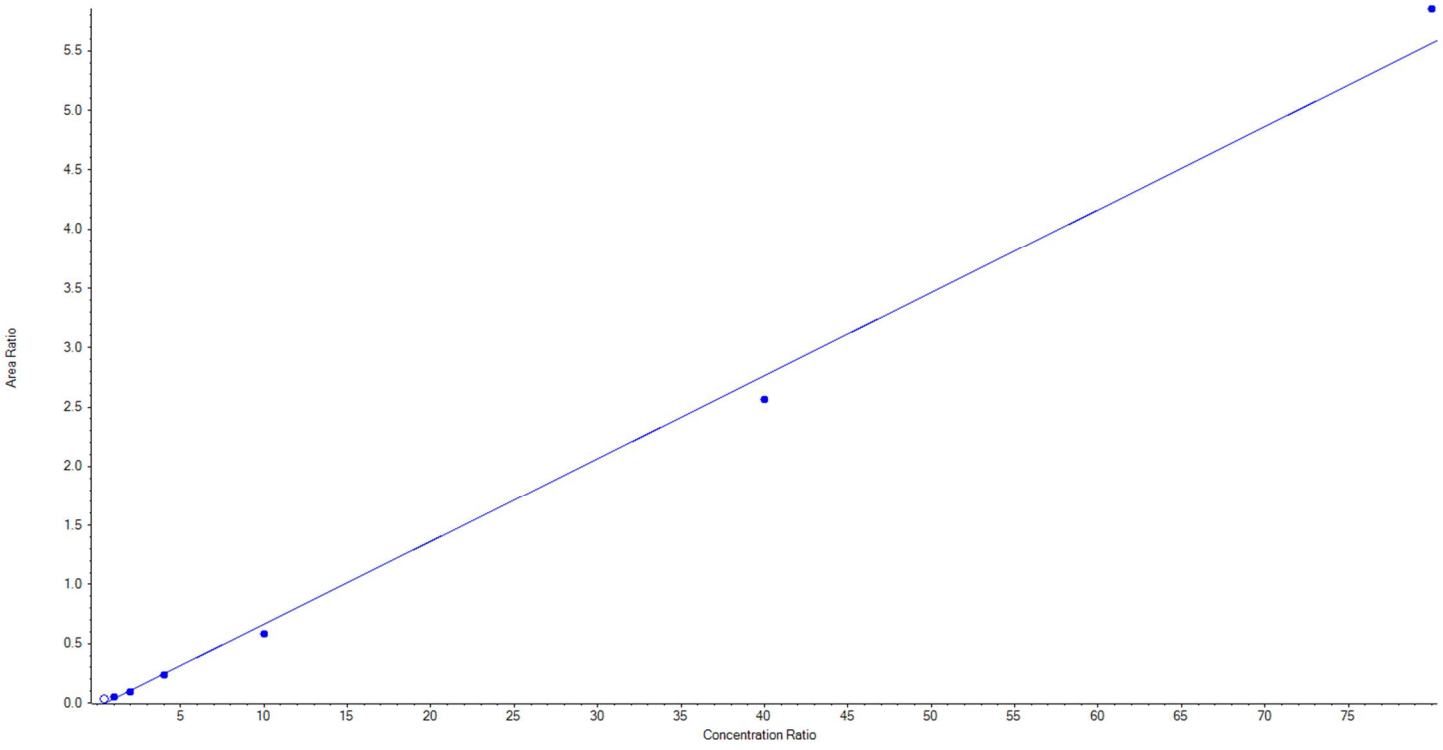
Calibration Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:23:59 PM

| | | | |
|---|---|---|---|
| **Analyte Name** | NEtFOSAA_2 | **Data File** | 18-0501-515-520-500.wiff |
| **MRM Transition** | 584.0 / 483.0 | **Result Table** | 18-0520_Base |
| **Internal Standard** | d5-EtFOSAA | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 8/24/2018 10:26:02 PM | **Acquisition Method** | 5-0369.dam |

Regression Equation: y = 0.06998 x + -0.03555 (r = 0.99717) (weighting: 1 / x)

| Vial | Sample Name | Sample ID | Used for ICAL | Target Conc. (ng/L) | Calculated Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|---|
| 2 | JY38 | L1 | False | 100.00 | 236.281227 | 236.3 |
| 3 | JY39 | L2 | True | 250.00 | 319.753372 | 127.9 |
| 4 | JY40 | L3 | True | 500.00 | 443.979478 | 88.8 |
| 5 | JY41 | L4 | True | 1000.00 | 974.254801 | 97.4 |
| 6 | JY42 | L5 | True | 2500.00 | 2197.277628 | 87.9 |
| 7 | JY43 | L6 | True | 10000.00 | 9282.499347 | 92.8 |
| 8 | JY44 | L7 | True | 20000.00 | 21032.235373 | 105.2 |



BATTELLE

| | Isotope Dilution Calibration Curve Concentrations (ng/L) | | | | | | |
|---|---|---|---|---|---|---|---|
| | JY38 | JY39 | JY40 | JY41 | JY42 | JY43 | JY44 |
| PFBA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFPeA | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| PFHxA | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| PFHpA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFOA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFNA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFDA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFUnA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFDoA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFTrDA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFTeDA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| NMeFOSAA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| NEtFOSAA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFOSA | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFBS | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| PFPeS | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFHxS (Branched) | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| PFHpS | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFOS (Branched) | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| PFDS | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| PFNS | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| 4:2FTS | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| 6:2FTS | 100.00 | 250.00 | 500.00 | 1,000.00 | 2,500.00 | 10,000.00 | 20,000.00 |
| 8:2FTS | 101.00 | 252.50 | 505.00 | 1,010.00 | 2,525.00 | 10,100.00 | 20,200.00 |
| | Surrogates / Extracted Internal Standards | | | | | | |
| 13C4-PFBA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C5-PFPeA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C5-PFHxA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C4-PFHpA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C8-PFOA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C9-PFNA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C6-PFDA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C7-PFUnA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C2-PFDoA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C2-PFTeDA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| d3-MeFOSAA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| d5-EtFOSAA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C8-FOSA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C3-PFBS | 232.25 | 232.25 | 232.25 | 232.25 | 232.25 | 232.25 | 232.25 |
| 13C3-PFHxS | 236.50 | 236.50 | 236.50 | 236.50 | 236.50 | 236.50 | 236.50 |
| 13C8-PFOS | 239.25 | 239.25 | 239.25 | 239.25 | 239.25 | 239.25 | 239.25 |
| 13C2-4:2FTS | 233.75 | 233.75 | 233.75 | 233.75 | 233.75 | 233.75 | 233.75 |
| 13C2-6:2FTS | 237.25 | 237.25 | 237.25 | 237.25 | 237.25 | 237.25 | 237.25 |
| 13C2-8:2FTS | 239.50 | 239.50 | 239.50 | 239.50 | 239.50 | 239.50 | 239.50 |
| | Internal Standards | | | | | | |
| 13C3-PFBA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C2-PFOA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C2-PFDA | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 | 250.00 |
| 13C4-PFOS | 239.25 | 239.25 | 239.25 | 239.25 | 239.25 | 239.25 | 239.25 |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/08/2018 2:26:02 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY38 | **Injection Vial** | 2 |
| **Sample ID** | L1 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:36:54 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.56 | PFBS | 0.309 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.88 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.88 | PFHxA | 0.051 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.28 | PFHpA | 0.021 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.30 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.29 | PFHxS | 0.282 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.68 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.68 | PFOA | 0.062 | 0.064 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.07 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.07 | PFNA | 0.358 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.06 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.06 | PFOS | 0.183 | 0.177 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.42 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.42 | PFDA | 0.075 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.74 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.74 | PFUnA | 0.086 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | PFDoA | 0.157 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.27 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.27 | PFTrDA | 0.070 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.49 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.49 | PFTeDA | 0.049 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | NMeFOSAA | 0.623 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.74 | NEtFOSAA | 0.082 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.17 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/08/2018 2:26:10 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY39 | **Injection Vial** | 3 |
| **Sample ID** | L2 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:47:47 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.55 | PFBS | 0.289 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.87 | PFHxA | 0.079 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.26 | PFHpA | 0.026 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.29 | PFHxS | 0.271 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.67 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.67 | PFOA | 0.060 | 0.064 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.06 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.06 | PFNA | 0.289 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.06 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.06 | PFOS | 0.166 | 0.177 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.41 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.42 | PFDA | 0.065 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | PFUnA | 0.061 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | PFDoA | 0.171 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.26 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.26 | PFTrDA | 0.068 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.49 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | PFTeDA | 0.046 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | NMeFOSAA | 0.520 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | NEtFOSAA | 0.056 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.17 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/08/2018 2:26:15 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY40 | **Injection Vial** | 4 |
| **Sample ID** | L3 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T22:58:41 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.55 | PFBS | 0.295 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.87 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.87 | PFHxA | 0.082 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | PFHpA | 0.019 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.29 | PFHxS | 0.287 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.67 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.67 | PFOA | 0.067 | 0.064 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.06 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.06 | PFNA | 0.333 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.06 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.06 | PFOS | 0.177 | 0.177 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.41 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.42 | PFDA | 0.048 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | PFUnA | 0.056 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | PFDoA | 0.161 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.26 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.26 | PFTrDA | 0.060 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.48 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | PFTeDA | 0.049 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | NMeFOSAA | 0.580 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | NEtFOSAA | 0.054 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.17 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/08/2018 2:26:21 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY41 | **Injection Vial** | 5 |
| **Sample ID** | L4 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:09:34 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.56 | PFBS | 0.283 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.87 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.87 | PFHxA | 0.068 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | PFHpA | 0.019 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.29 | PFHxS | 0.283 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.67 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.67 | PFOA | 0.067 | 0.064 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.06 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.06 | PFNA | 0.313 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.06 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.06 | PFOS | 0.181 | 0.177 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.42 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.41 | PFDA | 0.042 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | PFUnA | 0.055 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | PFDoA | 0.161 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.27 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.27 | PFTrDA | 0.060 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.49 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | PFTeDA | 0.047 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | NMeFOSAA | 0.544 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | NEtFOSAA | 0.061 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.17 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/08/2018 2:26:27 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY42 | **Injection Vial** | 6 |
| **Sample ID** | L5 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:20:26 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.55 | PFBS | 0.292 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.87 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | PFHxA | 0.077 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | PFHpA | 0.018 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | PFHxS | 0.288 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.67 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.67 | PFOA | 0.067 | 0.064 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.06 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.06 | PFNA | 0.302 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.06 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.06 | PFOS | 0.177 | 0.177 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.41 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.41 | PFDA | 0.039 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | PFUnA | 0.046 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | PFDoA | 0.151 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.27 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.26 | PFTrDA | 0.065 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.48 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | PFTeDA | 0.046 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | NMeFOSAA | 0.544 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | NEtFOSAA | 0.062 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.16 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/08/2018 2:26:33 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY43 | **Injection Vial** | 7 |
| **Sample ID** | L6 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:31:18 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.56 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.55 | PFBS | 0.295 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | PFHxA | 0.077 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | PFHpA | 0.020 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | PFHxS | 0.279 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.67 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.67 | PFOA | 0.063 | 0.064 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.06 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.06 | PFNA | 0.317 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.06 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.06 | PFOS | 0.182 | 0.177 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.41 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.41 | PFDA | 0.044 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | PFUnA | 0.048 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.01 | PFDoA | 0.157 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.26 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | PFTrDA | 0.063 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | PFTeDA | 0.048 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.56 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.56 | NMeFOSAA | 0.534 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | NEtFOSAA | 0.062 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.16 | | | | |

BATTELLE

Summary Ion Ratio Report

Created with Analyst Reporter
Printed: 29/08/2018 2:26:39 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY44 | **Injection Vial** | 8 |
| **Sample ID** | L7 | **Injection Volume** | 10.00 |
| **Sample Type** | Standard | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-24T23:42:11 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Ratio Group | Calculated Ion ratio | Expected Ion Ratio | Ratio OK |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | PFBS | | | |
| PFBS_2 | 298.9 / 99.0 | 1.55 | PFBS | 0.297 | 0.294 | ü |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | PFHxA | | | |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | PFHxA | 0.075 | 0.073 | ü |
| PFHpA_1 | 363.0 / 319.0 | 2.26 | PFHpA | | | |
| PFHpA_2 | 363.0 / 169.0 | 2.26 | PFHpA | 0.019 | 0.020 | ü |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | PFHxS | | | |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | PFHxS | 0.281 | 0.282 | ü |
| PFOA_1 | 413.0 / 369.0 | 2.66 | PFOA | | | |
| PFOA_2 | 413.0 / 169.0 | 2.66 | PFOA | 0.062 | 0.064 | ü |
| PFNA_1 | 463.0 / 419.0 | 3.05 | PFNA | | | |
| PFNA_2 | 463.0 / 219.0 | 3.05 | PFNA | 0.296 | 0.316 | ü |
| PFOS_1 | 499.0 / 80.0 | 3.04 | PFOS | | | |
| PFOS_2 | 499.0 / 99.0 | 3.04 | PFOS | 0.176 | 0.177 | ü |
| PFDA_1 | 513.0 / 469.0 | 3.40 | PFDA | | | |
| PFDA_2 | 513.0 / 219.0 | 3.40 | PFDA | 0.044 | 0.051 | ü |
| PFUnA_1 | 563.0 / 519.0 | 3.72 | PFUnA | | | |
| PFUnA_2 | 563.0 / 269.0 | 3.72 | PFUnA | 0.051 | 0.058 | ü |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | PFDoA | | | |
| PFDoA_2 | 613.0 / 319.0 | 4.00 | PFDoA | 0.166 | 0.161 | ü |
| PFTrDA_1 | 663.0 / 619.0 | 4.25 | PFTrDA | | | |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | PFTrDA | 0.063 | 0.064 | ü |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | PFTeDA | | | |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | PFTeDA | 0.048 | 0.048 | ü |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.55 | NMeFOSAA | | | |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.55 | NMeFOSAA | 0.574 | 0.560 | ü |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.72 | NEtFOSAA | | | |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.72 | NEtFOSAA | 0.065 | 0.060 | ü |
| PFBA | 213.0 / 169.0 | 1.16 | | | | |

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:28:39 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY45 ICC | **Injection Vial** | 10 |
| **Sample ID** | ICC | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T00:03:55 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Conc. (ng/L) | Target Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | 945.317305 | 1010.00 | 93.60 |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 935.514031 | 1010.00 | 92.63 |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 955.098649 | 1010.00 | 94.56 |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 1000.164747 | 1010.00 | 99.03 |
| PFHpA_1 | 363.0 / 319.0 | 2.26 | 896.029725 | 1000.00 | 89.60 |
| PFHpA_2 | 363.0 / 169.0 | 2.27 | 772.698196 | 1000.00 | 77.27 |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | 965.455677 | 1010.00 | 95.59 |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | 995.242077 | 1010.00 | 98.54 |
| PFOA_1 | 413.0 / 369.0 | 2.67 | 882.629871 | 1000.00 | 88.26 |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 933.664163 | 1000.00 | 93.37 |
| PFNA_1 | 463.0 / 419.0 | 3.05 | 945.837479 | 1000.00 | 94.58 |
| PFNA_2 | 463.0 / 219.0 | 3.05 | 977.984830 | 1000.00 | 97.80 |
| PFOS_1 | 499.0 / 80.0 | 3.05 | 848.909424 | 1000.00 | 84.89 |
| PFOS_2 | 499.0 / 99.0 | 3.05 | 883.759256 | 1000.00 | 88.38 |
| PFDA_1 | 513.0 / 469.0 | 3.40 | 993.565292 | 1000.00 | 99.36 |
| PFDA_2 | 513.0 / 219.0 | 3.41 | 898.454706 | 1000.00 | 89.85 |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | 945.238689 | 1000.00 | 94.52 |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | 853.408516 | 1000.00 | 85.34 |
| PFDoA_1 | 613.0 / 569.0 | 4.01 | 1005.730822 | 1000.00 | 100.57 |
| PFDoA_2 | 613.0 / 319.0 | 4.01 | 983.797996 | 1000.00 | 98.38 |
| PFTrDA_1 | 663.0 / 619.0 | 4.25 | 1016.995563 | 1000.00 | 101.70 |
| PFTrDA_2 | 663.0 / 169.0 | 4.25 | 1017.066538 | 1000.00 | 101.71 |
| PFTeDA_1 | 713.0 / 669.0 | 4.47 | 1006.665369 | 1000.00 | 100.67 |
| PFTeDA_2 | 713.0 / 169.0 | 4.47 | 964.000724 | 1000.00 | 96.40 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.56 | 1038.070101 | 1000.00 | 103.81 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.56 | 1030.221581 | 1000.00 | 103.02 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.72 | 932.896900 | 1000.00 | 93.29 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.72 | 992.807735 | 1000.00 | 99.28 |
| PFBA | 213.0 / 169.0 | 1.17 | 911.339203 | 1000.00 | 91.13 |

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:28:44 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY41 CCV | **Injection Vial** | 18 |
| **Sample ID** | CCV | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:41:46 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_Base |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Conc. (ng/L) | Target Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | 950.847656 | 1010.00 | 94.14 |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 945.017353 | 1010.00 | 93.57 |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 965.269441 | 1010.00 | 95.57 |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 966.044767 | 1010.00 | 95.65 |
| PFHpA_1 | 363.0 / 319.0 | 2.27 | 945.477863 | 1000.00 | 94.55 |
| PFHpA_2 | 363.0 / 169.0 | 2.26 | 965.196317 | 1000.00 | 96.52 |
| PFHxS_1 | 399.0 / 80.0 | 2.29 | 993.450506 | 1010.00 | 98.36 |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | 981.879581 | 1010.00 | 97.22 |
| PFOA_1 | 413.0 / 369.0 | 2.67 | 929.030152 | 1000.00 | 92.90 |
| PFOA_2 | 413.0 / 169.0 | 2.67 | 900.588864 | 1000.00 | 90.06 |
| PFNA_1 | 463.0 / 419.0 | 3.06 | 987.821461 | 1000.00 | 98.78 |
| PFNA_2 | 463.0 / 219.0 | 3.06 | 945.261294 | 1000.00 | 94.53 |
| PFOS_1 | 499.0 / 80.0 | 3.06 | 934.607855 | 1000.00 | 93.46 |
| PFOS_2 | 499.0 / 99.0 | 3.06 | 949.403596 | 1000.00 | 94.94 |
| PFDA_1 | 513.0 / 469.0 | 3.41 | 978.375017 | 1000.00 | 97.84 |
| PFDA_2 | 513.0 / 219.0 | 3.41 | 1043.552710 | 1000.00 | 104.36 |
| PFUnA_1 | 563.0 / 519.0 | 3.73 | 832.529989 | 1000.00 | 83.25 |
| PFUnA_2 | 563.0 / 269.0 | 3.73 | 853.891854 | 1000.00 | 85.39 |
| PFDoA_1 | 613.0 / 569.0 | 4.02 | 998.337174 | 1000.00 | 99.83 |
| PFDoA_2 | 613.0 / 319.0 | 4.02 | 1023.050484 | 1000.00 | 102.31 |
| PFTrDA_1 | 663.0 / 619.0 | 4.26 | 983.863398 | 1000.00 | 98.39 |
| PFTrDA_2 | 663.0 / 169.0 | 4.26 | 1029.279993 | 1000.00 | 102.93 |
| PFTeDA_1 | 713.0 / 669.0 | 4.48 | 1005.405463 | 1000.00 | 100.54 |
| PFTeDA_2 | 713.0 / 169.0 | 4.48 | 969.105595 | 1000.00 | 96.91 |
| NMeFOSAA_1 | 570.0 / 419.0 | 3.57 | 1066.027098 | 1000.00 | 106.60 |
| NMeFOSAA_2 | 570.0 / 512.0 | 3.57 | 1046.776092 | 1000.00 | 104.68 |
| NEtFOSAA_1 | 584.0 / 419.0 | 3.73 | 968.096783 | 1000.00 | 96.81 |
| NEtFOSAA_2 | 584.0 / 483.0 | 3.73 | 1041.007902 | 1000.00 | 104.10 |
| PFBA | 213.0 / 169.0 | 1.16 | 987.885594 | 1000.00 | 98.79 |

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:14:44 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY45 ICC | **Injection Vial** | 10 |
| **Sample ID** | ICC | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T00:03:55 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Conc. (ng/L) | Target Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.17 | 256.423433 | 250.00 | 102.57 |
| 13C2-PFDoA | 615.0 / 570.0 | 4.00 | 236.412962 | 250.00 | 94.57 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.55 | 229.007354 | 250.00 | 91.60 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.71 | 244.394489 | 250.00 | 97.76 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 257.007980 | 250.00 | 102.80 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 257.575529 | 250.00 | 103.03 |
| 13C8-PFOA | 421.0 / 376.0 | 2.66 | 253.920137 | 250.00 | 101.57 |
| 13C9-PFNA | 472.0 / 427.0 | 3.04 | 266.243110 | 250.00 | 106.50 |
| 13C6-PFDA | 519.0 / 474.0 | 3.39 | 253.349129 | 250.00 | 101.34 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.71 | 245.125330 | 250.00 | 98.05 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.47 | 231.378794 | 250.00 | 92.55 |
| 13C3-PFBS | 302.0 / 99.0 | 1.53 | 214.031789 | 232.25 | 92.16 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.27 | 204.130881 | 236.50 | 86.31 |
| 13C8-PFOS | 507.0 / 99.0 | 3.03 | 237.268489 | 239.50 | 99.07 |

BATTELLE

QC Summary Report

Created with Analyst Reporter
Printed: 29/08/2018 2:14:56 PM

| | | | |
|---|---|---|---|
| **Sample Name** | JY41 CCV | **Injection Vial** | 18 |
| **Sample ID** | CCV | **Injection Volume** | 10.00 |
| **Sample Type** | Quality Control | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T01:41:46 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0520_SIS |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Conc. (ng/L) | Target Conc. (ng/L) | Recovery (%) |
|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.16 | 261.012832 | 250.00 | 104.41 |
| 13C2-PFDoA | 615.0 / 570.0 | 4.01 | 236.565854 | 250.00 | 94.63 |
| d3-MeFOSAA | 573.0 / 419.0 | 3.56 | 243.437952 | 250.00 | 97.38 |
| d5-EtFOSAA | 589.0 / 419.0 | 3.72 | 256.645799 | 250.00 | 102.66 |
| 13C5-PFHxA | 318.0 / 273.0 | 1.85 | 248.973663 | 250.00 | 99.59 |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 253.470989 | 250.00 | 101.39 |
| 13C8-PFOA | 421.0 / 376.0 | 2.66 | 248.455544 | 250.00 | 99.38 |
| 13C9-PFNA | 472.0 / 427.0 | 3.05 | 245.332675 | 250.00 | 98.13 |
| 13C6-PFDA | 519.0 / 474.0 | 3.40 | 244.197461 | 250.00 | 97.68 |
| 13C7-PFUnA | 570.0 / 525.0 | 3.72 | 259.891843 | 250.00 | 103.96 |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.48 | 233.166654 | 250.00 | 93.27 |
| 13C3-PFBS | 302.0 / 99.0 | 1.54 | 231.035155 | 232.25 | 99.48 |
| 13C3-PFHxS | 402.0 / 99.0 | 2.28 | 233.820301 | 236.50 | 98.87 |
| 13C8-PFOS | 507.0 / 99.0 | 3.04 | 246.499378 | 239.50 | 102.92 |

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 30/08/2018 2:30:54 PM

| | | | |
|---|---|---|---|
| **Sample Name** | J7397-FS(3) | **Injection Vial** | 39 |
| **Sample ID** | NASB-BLL15-GW-01-0818 | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T06:24:32 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_BASE_A |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| PFBS_1 | 298.9 / 80.0 | 1.55 | 215391.41 | 805.899058 | 103.1 | false |
| PFBS_2 | 298.9 / 99.0 | 1.55 | 51726.43 | 661.948742 | 90.1 | false |
| PFHxA_1 | 313.0 / 269.0 | 1.86 | 237204.49 | 902.625804 | 32.7 | false |
| PFHxA_2 | 313.0 / 119.0 | 1.86 | 19598.05 | 1008.586388 | 37.5 | false |
| PFHpA_1 | 363.0 / 319.0 | 2.26 | 95578.93 | 493.815495 | 31.7 | false |
| PFHpA_2 | 363.0 / 169.0 | 2.25 | 2815.44 | 635.364124 | 35.1 | false |
| PFHxS_1 | 399.0 / 80.0 | 2.28 | 1230678.11 | 3282.986749 | 236.8 | false |
| PFHxS_2 | 399.0 / 99.0 | 2.28 | 331959.59 | 3153.845554 | 317.6 | false |
| PFOA_1 | 413.0 / 369.0 | 2.66 | 530731.98 | 1771.335165 | 136.3 | false |
| PFOA_2 | 413.0 / 169.0 | 2.63 | 49450.76 | 2551.091580 | 147.7 | false |
| PFNA_1 | 463.0 / 419.0 | 3.05 | 21828.73 | 105.973949 | 32.8 | false |
| PFNA_2 | 463.0 / 219.0 | 3.05 | 7114.10 | 98.324855 | 35.1 | false |
| PFOS_1 | 499.0 / 80.0 | 2.95 | 307740.61 | 858.840921 | 80.7 | false |
| PFOS_2 | 499.0 / 99.0 | 3.04 | 39405.57 | 627.077468 | 97.0 | true |
| PFDA_1 | 513.0 / 469.0 | N/A | N/A | N/A | N/A | true |
| PFDA_2 | 513.0 / 219.0 | N/A | N/A | N/A | N/A | true |
| PFUnA_1 | 563.0 / 519.0 | N/A | N/A | N/A | N/A | true |
| PFUnA_2 | 563.0 / 269.0 | N/A | N/A | N/A | N/A | true |
| PFDoA_1 | 613.0 / 569.0 | N/A | N/A | N/A | N/A | true |
| PFDoA_2 | 613.0 / 319.0 | N/A | N/A | N/A | N/A | true |
| PFTrDA_1 | 663.0 / 619.0 | N/A | N/A | N/A | N/A | true |
| PFTrDA_2 | 663.0 / 169.0 | N/A | N/A | N/A | N/A | true |
| PFTeDA_1 | 713.0 / 669.0 | N/A | N/A | N/A | N/A | true |
| PFTeDA_2 | 713.0 / 169.0 | N/A | N/A | N/A | N/A | true |
| NMeFOSAA_1 | 570.0 / 419.0 | N/A | N/A | N/A | N/A | true |
| NMeFOSAA_2 | 570.0 / 512.0 | N/A | N/A | N/A | N/A | true |
| NEtFOSAA_1 | 584.0 / 419.0 | N/A | N/A | N/A | N/A | true |
| NEtFOSAA_2 | 584.0 / 483.0 | N/A | N/A | N/A | N/A | true |
| PFBA | 213.0 / 169.0 | 1.23 | 2037704.13 | 15011.278920 | 167.5 | false |

PFOA 6.81 ng/L
y=1.18259 x + -0.20416

((530731.98 / 64922.46)+0.20416 / 1.18259)*250*0.0005*2/ 0.260 = 6.8128 ng/L

LCS PFOA 123% 12.27/10 * 100 = 122.7%

MS PFOA 87% 31.78-6.81/28.85*100 = 86.55%
MSD PFOA 92% 33.91-6.81/29.41*100 = 92.146%
RPD 5.6 (87-92)/(87+92/2)*100 = 5.59

BATTELLE

Summary Quant Report

Created with Analyst Reporter
Printed: 30/08/2018 1:45:36 PM

| | | | |
|---|---|---|---|
| **Sample Name** | J7397-FS(3) | **Injection Vial** | 39 |
| **Sample ID** | NASB-BLL15-GW-01-0818 | **Injection Volume** | 10.00 |
| **Sample Type** | Unknown | **Instrument Name** | QTRAP 5500 |
| **Acquisition Date** | 2018-08-25T06:24:32 | **Data File** | 18-0501-515-520-500.wiff |
| **Acquisition Method** | 5-0369.dam | **Result Table** | 18-0500_SIS_A |
| **Sample Comment** | | | |

## Results Summary

| Analyte | MRM Transition | RT | Area | Conc. (ng/L) | Signal/Noise Ratio | Modified |
|---|---|---|---|---|---|---|
| 13C4-PFBA | 217.0 / 172.0 | 1.16 | 22674.43 | 20.133286 | 485.7 | false |
| 13C2-PFDoA | 615.0 / 570.0 | 3.99 | 57815.06 | 182.481208 | 524.3 | false |
| d3-MeFOSAA | 573.0 / 419.0 | 3.55 | 10237.10 | 237.350111 | 122.6 | false |
| d5-EtFOSAA | 589.0 / 419.0 | 3.71 | 9594.22 | 195.675116 | 114.3 | false |
| 13C5-PFHxA | 318.0 / 273.0 | 1.84 | 57983.66 | 279.192982 | 160.1 | false |
| 13C4-PFHpA | 367.0 / 322.0 | 2.25 | 72538.76 | 315.165442 | 427.1 | false |
| 13C8-PFOA | 421.0 / 376.0 | 2.65 | 64922.46 | 255.309825 | 532.5 | false |
| 13C9-PFNA | 472.0 / 427.0 | 3.04 | 66493.66 | 259.790971 | 563.0 | false |
| 13C6-PFDA | 519.0 / 474.0 | 3.39 | 68030.10 | 248.314960 | 727.5 | false |
| 13C7-PFUnA | 570.0 / 525.0 | 3.70 | 65858.13 | 227.336910 | 551.2 | false |
| 13C2-PFTeDA | 715.0 / 670.0 | 4.46 | 30344.32 | 107.712854 | 1106.8 | false |
| 13C3-PFBS | 302.0 / 99.0 | 1.53 | 20461.71 | 231.970900 | 230.5 | false |
| 13C3-PFHxS | 402.0 / 99.0 | 2.27 | 21237.59 | 301.671994 | 165.6 | false |
| 13C8-PFOS | 507.0 / 99.0 | 3.03 | 17738.32 | 226.628552 | 113.8 | false |

| DODCMD_ID | INSTALLATION_ID | SDG | SITE_NAME | NORM_SITE_NAME | LOCATION_NAME | LOCATION_TYPE_DESC | COORD_X | COORD_Y | CONTRACT_ID | DO_CTO_NUMBER | CONTR_NAME | SAMPLE_NAME | SAMPLE_MATRIX_DESC | SAMPLE_TYPE_DESC | COLLECT_DATE | ANALYTICAL_METHOD | ANALYTICAL_METHOD_GRP_DESC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MID_ATLANTIC | BRUNSWICK_NAS | 18-0520 | | | | | | | N6247016D9008 | WE21 | TETRA TECH, INC. | NASB-BLL15-GW-FB01-080918 | Water for QC samples | Field blank | 9-Aug-18 | 537 | Perfluoroalkyl Compounds |